

REPORT NUMBER KAR21113-01

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**GENERAL MOTORS CORPORATION
2002 CHEVROLET MALIBU
4 DOOR SEDAN**

NHTSA NUMBER: GM0006

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NOVEMBER 30, 2001

FINAL REPORT

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16. Abstract A 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test was conducted on the subject 2002 Chevrolet Malibu 4 Door Sedan in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering laboratories in Adelanto, California, on November 19, 2001. The impact velocity of the Moving Deformable Barrier was 61.96 km/h, and the outside ambient temperature at the struck (driver's) side of the vehicle was 17.7 deg. C. The target vehicle's maximum post test static crush was 459 mm located at level 2 . The test vehicle's occupant performance is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 35%;">Measurement Description</th> <th style="width: 30%;">Driver SID</th> <th style="width: 35%;">Passenger SID</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) G's</td> <td style="text-align: center;">79.7</td> <td style="text-align: center;">60.3</td> </tr> <tr> <td>Left Lower Rib (LLR) G's</td> <td style="text-align: center;">86.8</td> <td style="text-align: center;">67.8</td> </tr> <tr> <td>Lower Spine (T₁₂) G's</td> <td style="text-align: center;">80.0</td> <td style="text-align: center;">63.6</td> </tr> <tr> <td>Thoracic Trauma Index (TTI) G's</td> <td style="text-align: center;">83</td> <td style="text-align: center;">66</td> </tr> <tr> <td>Pelvis (PEV) G's</td> <td style="text-align: center;">103</td> <td style="text-align: center;">76</td> </tr> </tbody> </table>				Measurement Description	Driver SID	Passenger SID	Left Upper Rib (LUR) G's	79.7	60.3	Left Lower Rib (LLR) G's	86.8	67.8	Lower Spine (T ₁₂) G's	80.0	63.6	Thoracic Trauma Index (TTI) G's	83	66	Pelvis (PEV) G's	103	76
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SECTION 1

PURPOSE and TEST PROCEDURE

1.1 PURPOSE

This Side Impact NCAP test is conducted as part of the FY' 2002 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-99-D-02041. The purpose of this test is to generate comparative side impact data on a 2002 Chevrolet Malibu 4 Door Sedan manufactured by General Motors Corporation.

1.2 TEST PROCEDURE

The side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Crashworthiness Standards (OCS), laboratory test procedure NCAP Side Impact Testing, dated July 1997 and the corresponding KARCO Engineering Test Procedure KTP-214D, dated November 18, 1998. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

2.1 SUMMARY OF SIDE IMPACT NCAP TEST

A model year 2002 Chevrolet Malibu 4 Door Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.96 km/h. The specified impact velocity range is from 61.1 to 62.7 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 1623 kg and the test weight of the MDB was 1361 kg. The test was conducted at KARCO Engineering in Adelanto, California, on November 19, 2001.

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	Not Deployed	None	Not Applicable
Side Torso Airbag	None	Not Applicable	None	Not Applicable
Head Curtain Airbag	None	Not Applicable	None	Not Applicable

One (1) real-time motion picture camera and ten (10) high-speed motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and SID can be found in Appendix A. Two 50th percentile adult male Side Impact Dummy's (SID's) were placed in the driver's and left rear passenger designated seating positions according to the test procedure. Each SID is instrumented with contact switches on the pelvis and thorax, and eleven accelerometers in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X, Y, and Z axes)

The test vehicle was instrumented with twenty-five (25) structural accelerometers and the MDB was instrumented with five (5) accelerometers and a one (1) contact switch on the right bumper to compare left side to right side bumper impact timing. All data channels were recorded with a fully self contained on-board Test Data Acquisition System (TDAS). The data was digitally sampled at 10,000 samples per second and processed per Appendix V of the Test Procedure.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 459 mm at level 2, 1200mm rearward of the left vertical impact point. The driver SID, Serial No. 275 and the passenger SID, Serial No. 274 were calibrated just prior to this test. The SID injury criteria is summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	83	66
Peak Pelvic G's (PEV)	G's	103	76

Tests summaries and post-test observations are presented in Section 3. The vehicle, camera, and occupant measurements are presented in Section 4. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID's, vehicle, and MDB response data traces. Appendix C contains the SID's Configuration and performance verification data. Appendix D contains the test equipment information.

SECTION 3
SIDE IMPACT DUMMY (SID) AND VEHICLE TEST DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

TEST VEHICLE INFORMATION

Make	Chevrolet
Model	Malibu
Body Style	4 Door Sedan
NHTSA No.	GM0006
VIN	1G1ND52J32M579440
Color	Silver
Delivery Date	11/12/2001
Odometer Reading (mile)	46
Dealer	Crest Chevrolet
Transmission	4 Speed Automatic
Final Drive	Front
Type/Number of Cylinders	V-6
Engine Displacement (L)	3.1
Engine Placement	Transverse

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Driver Side Torso Airbag	No
Driver Side Head Airbag	No
Rear Pass. Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Head Airbag	No
Power Brakes	Yes
Power Steering	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	No
Anti-lock Brakes	Yes
Tilt Steering Wheel	Yes
Power Windows	No
Power Seats	No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors Corporation	GVWR (kg)	1822
Date of Manufacture	October-01	GAWR Front (kg)	1000
		GAWR Rear (kg)	822

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	200	200
Cold Pressure (kPa)	180	180
Recommend Tire Size	P215/60R15	P215/60R15
Tire Size on Vehicle	P215/60R15	P215/60R15
Tire Manufacturer	Firestone	Firestone

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3	0	5
Capacity Wt. (VCW) (kg)				416
Cargo Weight (RCLW) (kg)				76

DATA SHEET NO. 1...(CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (<i>UVW</i>)			As Tested (<i>ATW</i>)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	443	254		470	356	
Right	kg	447	247		461	336	
Ratio	%	64.0	36.0		57.4	42.6	
Totals	kg	890	501	1391	931	692	1623

TARGET TEST WEIGHT CALCULATION*

Measured Parameter	Units	Value
Total Delivered Weight (<i>UVW</i>)	kg	1391
Weight of 2 P572F Side Impact Dummies	kg	161
Rated Cargo/Luggage Weight (<i>RCLW</i>)	kg	76
Calculated Vehicle Target Weight (<i>TVT</i> W)	kg	1628

*Actual As Tested Weight (ATW) will be TVTW -5/-10 kg

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	705	710	704	706	979
As Tested	mm	695	706	649	658	1159
Fully Loaded	mm	691	708	650	666	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel base	mm	2718
Total Vehicle Length at Left Side	mm	3239
Total Vehicle Length at Centerline	mm	4821
Total Vehicle Length at Right Side	mm	3240
Weight of Ballast In Cargo Area	kg	82
Amount of Stoddard Solvent in Fuel Tank	Liters	49.1

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel base	mm	2718
Target Impact Point Aft of Front Axle	mm	419
Actual Impact Point Aft of Front Axle	mm	420

DATA SHEET NO. 1...(continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

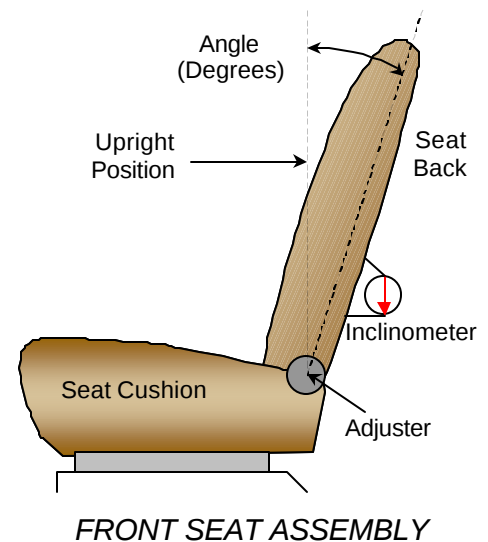
Test Date: 11/19/01

NOMINAL DESIGN RIDING POSITION

The driver's seat back is positioned to the manufacturer's designated angle. The procedure for positioning the seat is as follows: A slit is cut into fabric of the seat at the outboard edge, approximately 10-13 inches above the pivot point to expose the frame of the seat. An inclinometer is firmly placed against the flat portion of the frame surface and the seat back is adjusted to the manufacturers designated angle.

Driver seat back angle: 27° with a seated dummy

Rear seat back angle: 16° fixed



SEAT FORE/AFT POSITIONS

The driver's seat is adjustable. The fore/aft position is set to the middle.

Driver seat fore/aft total travel: 25 seat detents

Rear seat fore/aft total travel: Seat is fixed

Driver seat fore/aft position: Placed in the 13th detent

Rear seat fore/aft position: Seat is fixed

SEAT BELT UPPER ANCHORAGE

Driver seat has 4 seat belt anchorage positions, placed in the 2nd position from the top. Rear passenger seat belt anchorage is fixed and has no adjustment.

DATA SHEET NO. 1...(continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

FUEL TANK CAPACITY DATA

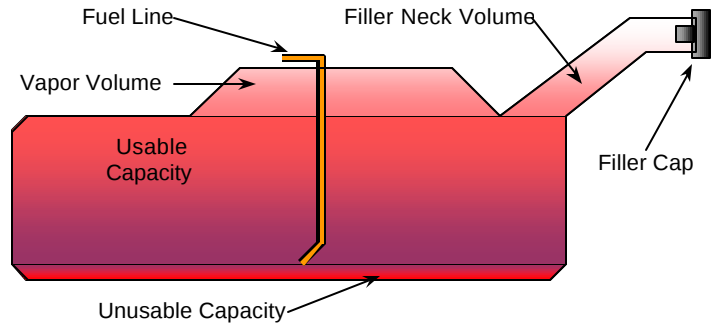
The "Usable Capacity" of the standard equipment fuel tank is: 52.8 liters

The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

92-94% of "Usable Capacity" for certification to FMVSS 301 requirement: 48.6 to 49.7 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 49.1 liters

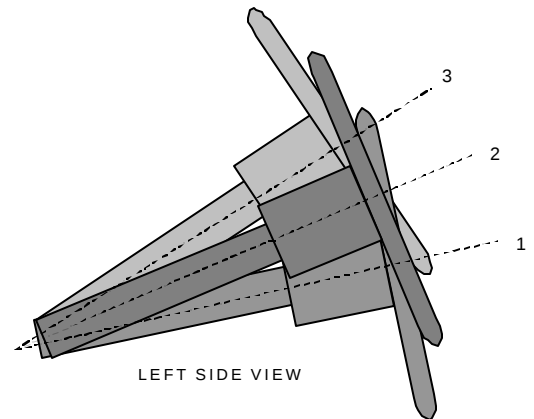
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for approximately three (3) seconds with the ignition in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes, when it is moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed onto the plate and the angle is measured. The tested vehicle has its steering column set at position 2 as indicated in the drawing at right and the angle below.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: 12°

Geometric center, position 2: 22°

Uppermost, position 3: 32°

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	443	254		470	356	
Right	kg	447	247		461	336	
Weight Ratio	%	64.0	36.0		57.4	42.6	
Totals	kg	890	501	1391	931	692	1623

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	261	251
Level 2	Occupant H-Point	mm	459	495
Level 3	Mid Door	mm	418	573
Level 4	Window Sill	mm	412	871
Level 5	Window Top	mm	141	1357
N/A	Maximum Penetration	mm	459	

INSTRUMENTATION

Driver SID Accelerometers	11
Passenger SID Accelerometers	11
Vehicle Structure Accelerometers	25
MDB Accelerometers	5
Total	52

16mm MOVIE COVERAGE

High Speed, Vehicle On-Board	3
High Speed, Off-Board	5
High Speed, MDB On-Board	2
Real Time, Panning	1
Total	11

DATA SHEET NO. 3
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.96
Trap No. 2 Velocity (Redn.)	km/h	61.1 to 62.7	61.99
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.5

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE (mm)

Vertical Location			From Centerline		Max Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	151
B	Top of Bumper	533	800	Right	91
C	Mid Level	686	800	Right	167
D	Top of Stack	813	800	Right	204

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2
High Speed Cameras	2

DATASHEET NO. 4
POST TEST OBSERVATIONS

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID	Rear Seat SID
Dummy Type / Serial No.	P572F, SID / No. 275	P572F, SID / No. 274
Head Contact	D-Ring	C-Pillar
Upper Torso Contact	Panel	Panel
Lower Torso Contact	Panel	Panel
Left Knee Contact	Window Handle	Panel
Right Knee Contact	Knee	Knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Remained closed inoperable	Remained closed inoperable
Right Side Door Opening	Remained closed operable	Remained closed operable
Seat Movement	None	None
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Pillars pushed inward with no apparent failure
Sill Separation	No Apparent Visible Failure
Windshield Damage	Glazing Cracks on Struck Side Only
Window Damage	Both Left Side Windows Broke.
Other Notable Effects	Trunk became open during impact

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 01		Left Rear (Passenger) Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	Not Deployed	None	Not Applicable
Side Torso Airbag	None	Not Applicable	None	Not Applicable
Head Curtain Airbag	None	Not Applicable	None	Not Applicable
Seat Belt Pretensioner	Yes	Unknown	Yes	Unknown
Seat Belt Load Limiter	Yes	Unknown	Yes	Unknown

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	9(Right)
Vertical Offset	mm	+/- 20	7(Below)

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5
SID INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

THORAX AND PELVIS PEAK ACCELERATIONS, PRIMARY (FIR 100 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Upper Rib (LUR)	Y	G's	79.7	32.5	-25.0	71.9	60.3	31.9	-7.2	107.5
Lower Rib (LLR)	Y	G's	86.8	33.1	-14.9	107.5	67.8	32.5	-11.7	70.6
Lower Spine (T ₁₂)	Y	G's	80.0	35.0	-28.9	62.5	63.6	35.6	-24.3	65.0
Pelvis (PEV)	Y	G's	102.9	27.5	-20.9	48.8	76.3	36.3	-19.6	70.0

THORACIC TRAUMA INDEX (TTI) AND PELVIC ACCELERATION, PRIMARY (FIR 100 Filtered)

Location	Driver				Passenger			
	LLR	T ₁₂	TTI(g)	PEV(g)	LLR	T ₁₂	TTI(g)	PEV(g)
Primary Rib, Spine, and Pelvis	86.838	79.966	83	103	67.829	63.607	66	76

THORAX AND PELVIS PEAK ACCELERATIONS, REDUNDANT (FIR 100 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Upper Rib (LUR)	Y	G's	79.2	32.5	-26.0	71.9	60.4	31.9	-7.0	108.1
Lower Rib (LLR)	Y	G's	86.5	33.1	-15.1	85.0	68.1	32.5	-11.3	70.6
Lower Spine (T ₁₂)	Y	G's	80.1	35.0	-32.2	62.5	63.9	35.0	-25.0	64.4
Pelvis (PEV)	Y	G's	103.7	27.5	-21.9	48.8	76.8	36.3	-19.1	69.4

THORACIC TRAUMA INDEX (TTI) AND PELVIC ACCELERATION, REDUNDANT (FIR 100 Filtered)

Location	Driver				Passenger			
	LLR	T ₁₂	TTI(g)	PEV(g)	LLR	T ₁₂	TTI(g)	PEV(g)
Redundant Rib, Spine, and Pelvis	86.529	80.148	83	104	68.062	63.883	66	77

HEAD CG PEAK ACCELERATIONS (SAE CLASS 1000 Filtered)

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	21.9	170.0	-32.9	72.5	19.3	51.8	-15.9	74.7
Head CG	Y	G's	66.2	45.5	-29.2	54.2	96.8	50.3	-12.8	34.4
Head CG	Z	G's	67.2	52.8	-9.4	42.6	20.5	41.2	-54.4	54.3
Head CG Resultant	N/A	G's	72.4	52.8			102.8	51.9		

HEAD INJURY CRITERIA (SAE CLASS 1000 Filtered)

Location	Driver				Passenger			
	HIC	T ¹	T ²	Avg G	HIC	T ¹	T ²	Avg G
Head CG	598.1	39.9	75.8	48.8	598.6	46.9	56.5	82.4

Positive Acceleration Polarities: Longitudinal (X) = Forward
 (Conforms to SAE J211) Lateral (Y) = Right
 Vertical (Z) = Down

DATA SHEET NO. 6

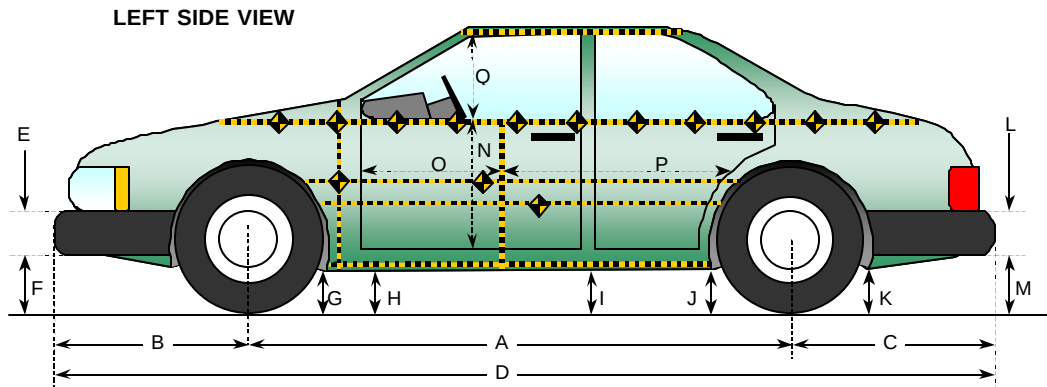
VEHICLE PRE-TEST AND POST TEST MEASUREMENTS

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01



All Measurements in mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2718	2662	56
B	Front Axle To FSOV	1008	1020	-12
C	Rear Axle to RSOV	1099	1113	-14
D	Total Length at Centerline	4821	4790	31
E	Front Bumper Thickness	340	340	0
F	Front Bumper Bottom to Ground	243	264	-21
G	Sill Height at Front Wheel Well	211	236	-25
H	Sill Height at Front Door Leading Edge	218	268	-50
I	Sill Height at "B" Pillar	208	232	-24
J1	Sill Height at Rear Wheel Well	175	184	-9
J2	Pinch Weld Height at Rear Wheel Well	197	212	-15
K	Sill Height aft of Rear Wheel Well	8	245	-237
L	Rear Bumper Thickness	355	355	0
M	Rear Bumper Bottom to Ground	265	328	-63
N	Sill Height to Window Bottom Sill	648	568	80
O	Front Door Leading Edge to Impact CL	794	774	20
P	Rear Door Trailing Edge to Impact CL	1280	938	342
Q	Front Window Opening	418	397	21
R	Right Side Length	3240	3252	-12
S	Left Side Length	3239	3150	89
T	Vehicle Width at "B" Post	1759	1411	348

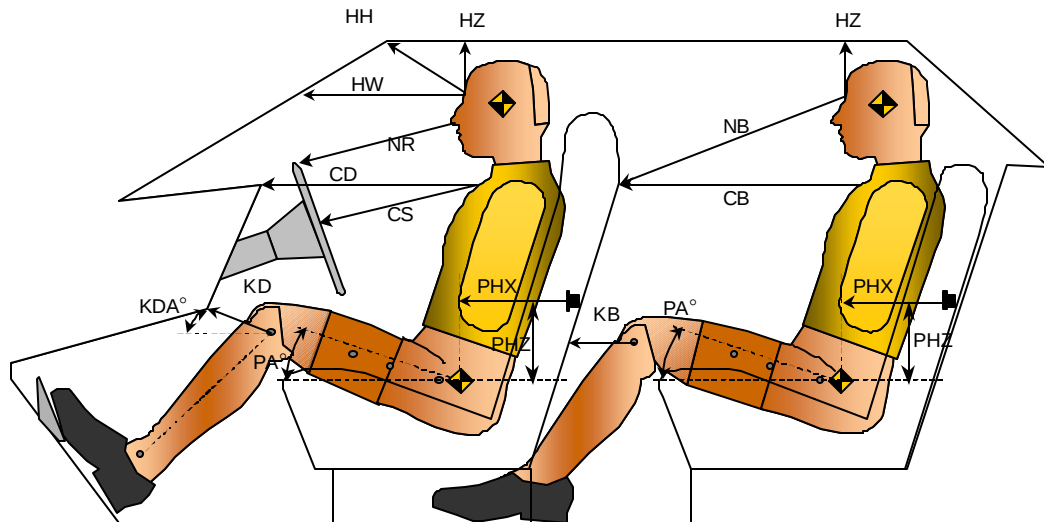
DATA SHEET NO. 7
SID LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01



Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length(mm)	Angle(°)	Length(mm)	Angle(°)
HH		Head to Header	390	18		
HW		Head to Windshield	630			
HZ	HZ	Head to Roof	202	90	125	90
NR	NB	Nose to Rim/Nose to Seatback	472	11	685	21
CD	CB	Chest to Dash or Seatback	545	7	610	3
CS		Chest to Steering Wheel	358	14		
KDL	KBL	Left Knee to Dash or Seatback	165	34	250	4
KDR	KBR	Right Knee to Dash or Seatback	135		258	
PA	PA	Pelvic Angle		23		25
PHX	PHX	H-Point to Striker (X-Axis)	212		268	
PHZ	PHZ	H-Point to Striker (Z-Axis)	120		250	
PHY	PHY	Striker to H Point (Y-Axis)	241		223	

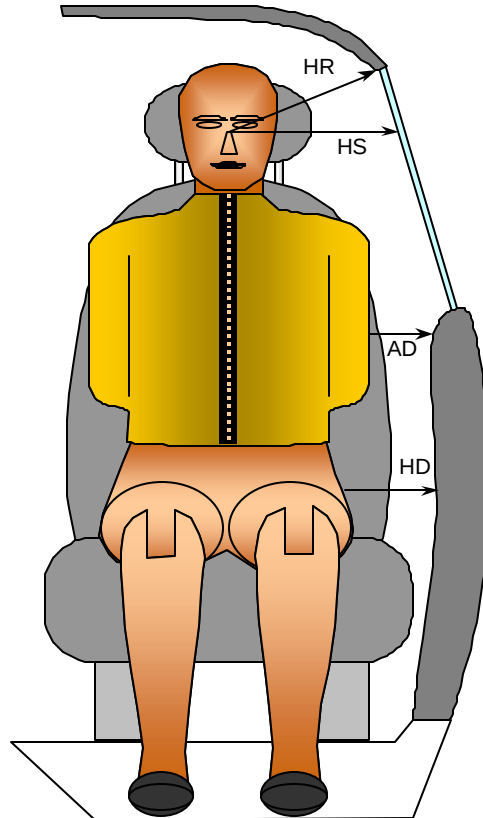
DATA SHEET NO. 8
SID LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No. GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01



FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	256	233
HS	Head to Side Window	mm	325	300
AD	Arm to Door	mm	50	65
HD	H-Point to Door	mm	145	105

DATA SHEET NO. 9

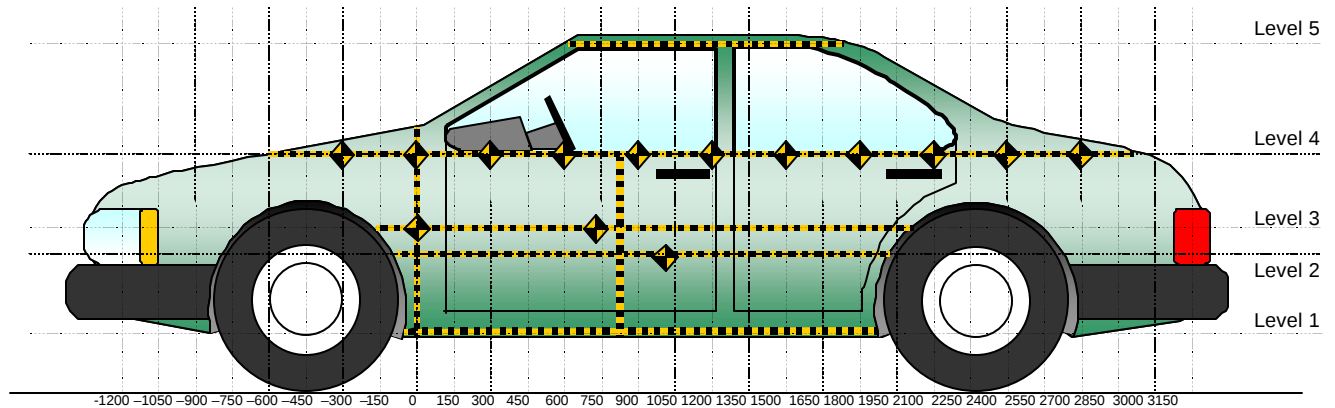
VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.

Measurements taken 900mm right of impact reference.

All measurements below in mm.

Level	Measurement Description	Height Above Ground
5	Window Top	1357
4	Window Sill	871
3	Mid Door	573
2	Occupant H-Point	495
1	Sill Top	251

DATA SHEET NO. 10 - VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

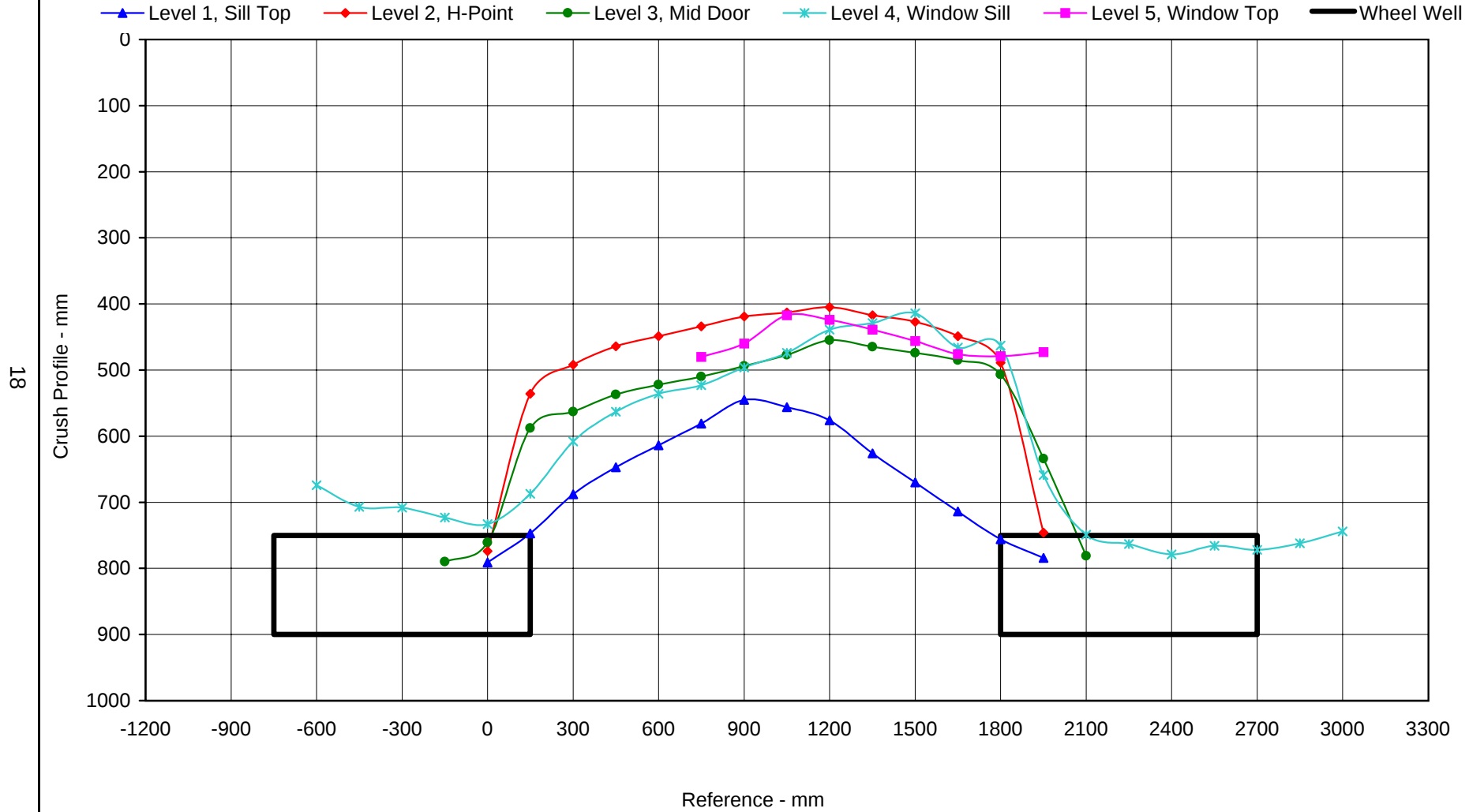
Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 2001-11-19

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600				708					674					34	
-450				749					707					42	
-300				776					708					68	
-150			872	793				790	723				82	70	
0	817	864	863	809		791	774	761	733		26	90	102	76	
150	812	861	866	812		747	536	588	687		65	325	278	125	
300	808	861	869	816		688	492	563	608		120	369	306	208	
450	807	862	871	823		647	464	537	563		160	398	334	260	
600	807	863	872	824		614	449	522	536		193	414	350	288	
750	807	863	874	826	549	581	434	510	523	480	226	429	364	303	69
900	806	864	874	828	556	545	419	494	496	460	261	445	380	332	96
1050	806	864	874	829	558	556	413	477	474	417	250	451	397	355	141
1200	807	864	873	828	554	576	405	455	439	424	231	459	418	389	130
1350	809	863	872	827	553	626	417	465	429	439	183	446	407	398	114
1500	811	861	872	826	550	670	427	474	414	456	141	434	398	412	94
1650	812	861	871	824	553	714	449	485	466	476	98	412	386	358	77
1800	815	861	869	822	542	756	489	507	463	479	59	372	362	359	63
1950	816	860	864	820	524	784	746	634	659	473	32	114	230	161	51
2100			865	817				781	749				84	68	
2250				815					763					52	
2400				807					779					28	
2550				801					766					35	
2700				785					772					13	
2850				767					762					5	
3000				752					744					8	

Pre-Test and Post-Test dimensions are actual distance from centerline of test vehicle.

DATA SHEET NO. 10...(continued)



Maximum Crush, Level 1: 261 mm at 900 mm

Maximum Crush, Level 2: 459 mm at 1200 mm

Maximum Crush, Level 3: 418 mm at 1200 mm

Maximum Crush, Level 4: 412 mm at 1500 mm

Maximum Crush, Level 5: 141 mm at 1050 mm

Test Program: 55/28 km/h 90° Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

Test Date: 11-19-01



DATA SHEET NO. 11

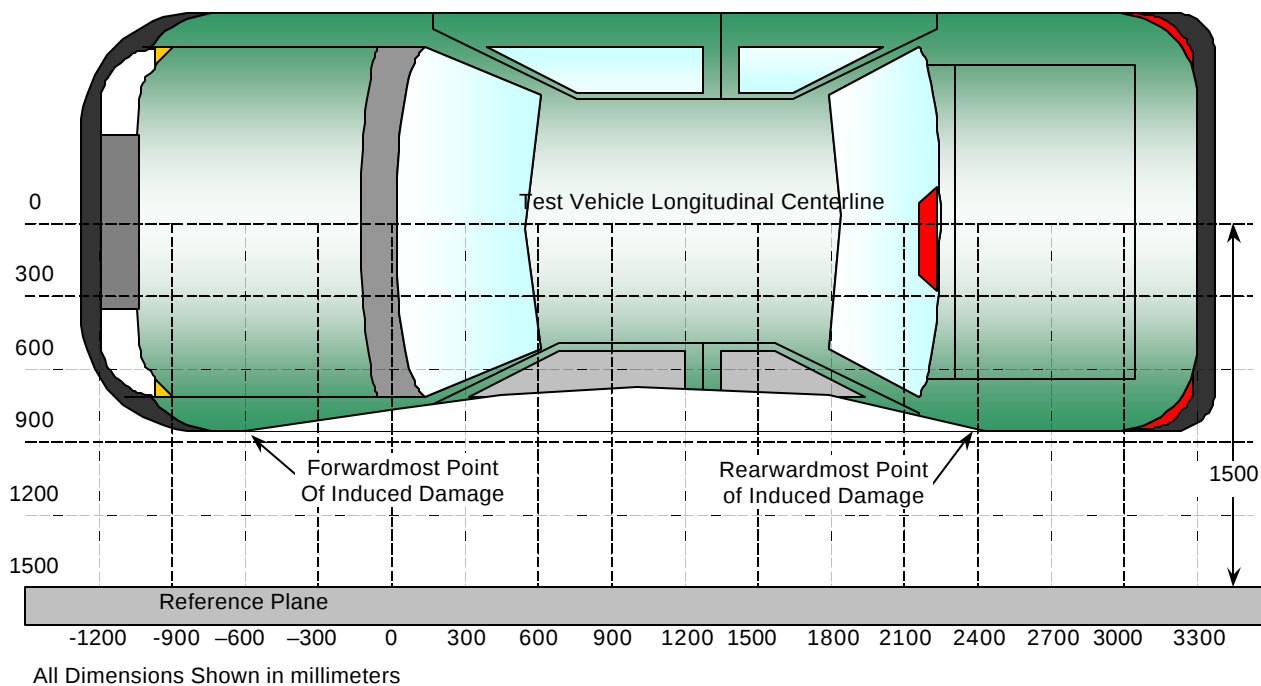
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01



TOP VIEW

Damage Profile Distances

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max Static Crush (mm)
1	-600	4	708	674	34
2	0	3	863	761	102
3	750	2	863	434	429
4	1500	2	861	427	434
5	2250	4	815	763	52
6	3000	4	752	744	8

Pre-Test and Post-Test measurements are distance from vehicle centerline.

DATA SHEET NO. 12

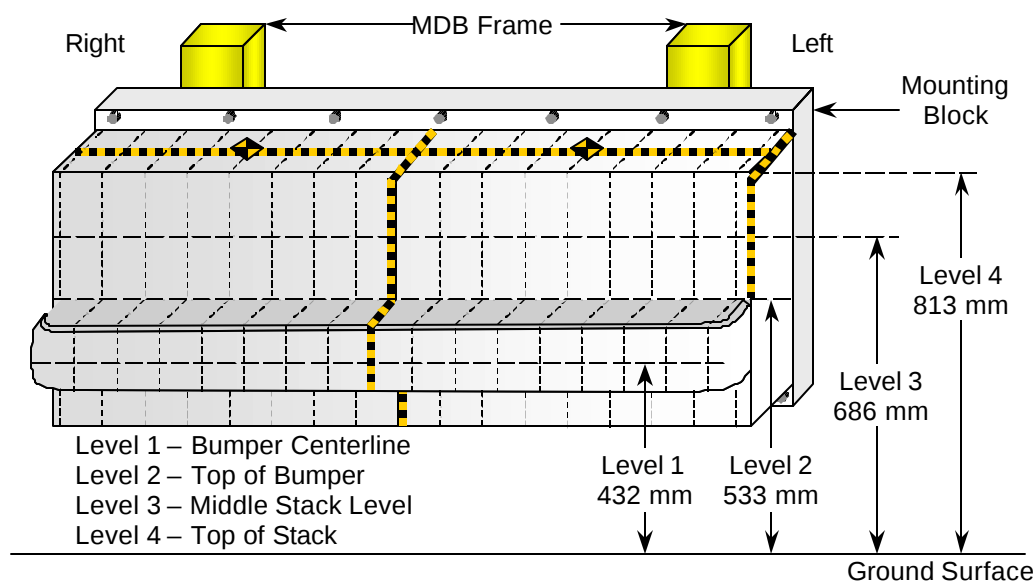
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01



DEFORMABLE BARRIER STATIC CRUSH

Stack	Distance Right of Center								C _L	Distance Left of Center							
Level	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	133	106	86	73	67	68	63	57	56	59	63	68	73	79	88	110	151
2	76	55	41	36	35	30	33	33	31	36	40	44	49	55	61	71	91
3	37	13	5	4	5	13	21	16	15	18	21	26	31	38	58	99	167
4	168	23	0	3	5	9	19	20	23	27	33	41	54	77	108	141	204

All Dimensions in mm

DATA SHEET NO. 13

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

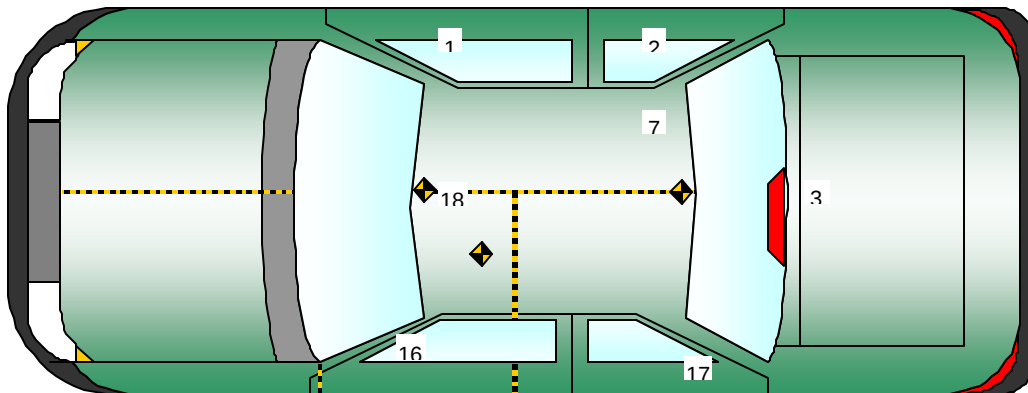
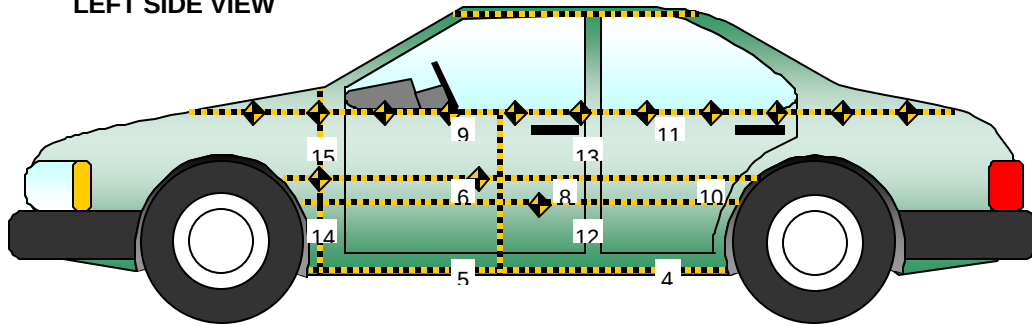
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

LEFT SIDE VIEW



No.	Location
1	Right Sill at Front Seat
2	Right Sill at Rear Seat
3	Rear Floorpan Above Axle
4	Left Sill at Rear Door
5	Left Sill at Front Door
6	Left Front Door Centerline
7	Right Rear Occupant Compartment
8	Left Front Door Mid-Rear
9	Left Front Door Upper Centerline

No.	Location
10	Left Rear Door Mid-Rear
11	Left Rear Door Upper Centerline
12	Left Lower B-Post
13	Left Middle B-Post
14	Left Lower A-Post
15	Left Middle A-Post
16	Front Seat Track
17	Rear Seat Track or Structure
18	Vehicle CG

DATA SHEET NO. 13
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)			Peak Values (G's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	Right Sill at Front Seat	2870	655	380	X	Channels failed at 14.5 msec., no useable data			
					Y				
					Z				
					RES				
2	Right Sill at Rear Seat	1860	670	380	X	2.6	39.8	-5.3	11.6
					Y	17.0	45.9	-2.4	161.8
					Z	7.5	44.9	-9.1	14.9
					RES	19.1	15.3		
3	Rear Floorpan Above Axle	850	0	305	X	5.7	61.8	-9.0	11.0
					Y	25.0	18.6	-3.8	124.0
					Z	31.6	40.2	-26.9	68.2
					RES	38.5	39.9		
4	Left Sill at Rear Door	1740	-760	230	Y	44.5	4.9	-12.8	23.2
5	Left Sill at Front Door	2610	-760	235	Y	74.6	11.9	-31.8	26.1
6	Front Door Centerline	2750	-765	690	Y	120.3	16.6	-214.7	22.4 *
7	Rear Occupant Compartment	2160	325	235	Y	21.1	15.9	-2.7	105.1
8	Front Door Mid-Rear	2280	-755	655	Y	204.2	8.4	-116.9	28.1
9	Front Door Upper Centerline	2590	-765	770	Y	201.2	12.7	-214.1	23.6
10	Rear Door Mid-Rear	1530	-760	650	Y	144.3	19.2	-42.7	26.4
11	Rear Door Upper Centerline	1755	-775	815	Y	116.0	18.8	-70.2	24.2
12	B-Post Lower	2210	-730	580	Y	150.7	3.5	-29.7	56.5
13	B-Post Middle	2210	-730	750	Y	142.4	3.5	-25.5	22.5
14	A-Post Lower	3320	-795	525	Y	85.2	3.2	0.0	10.8 *
15	A-Post Middle	3320	-795	740	Y	53.8	3.0	-14.5	156.4
16	Front Seat Track	2770	-510	400	Y	88.4	19.8	-42.4	30.0
17	Rear Seat Structure				Y				**
18	Vehicle CG	1950	0	295	X	6.6	38.2	-10.8	46.2
					Y	18.7	15.4	-2.3	164.2
					Z	13.6	25.1	-13.2	39.8
					RES	24.1	15.4		

* Channels Failed, check plot for failure times

** Not installed

DATA SHEET NO. 14

MDB ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

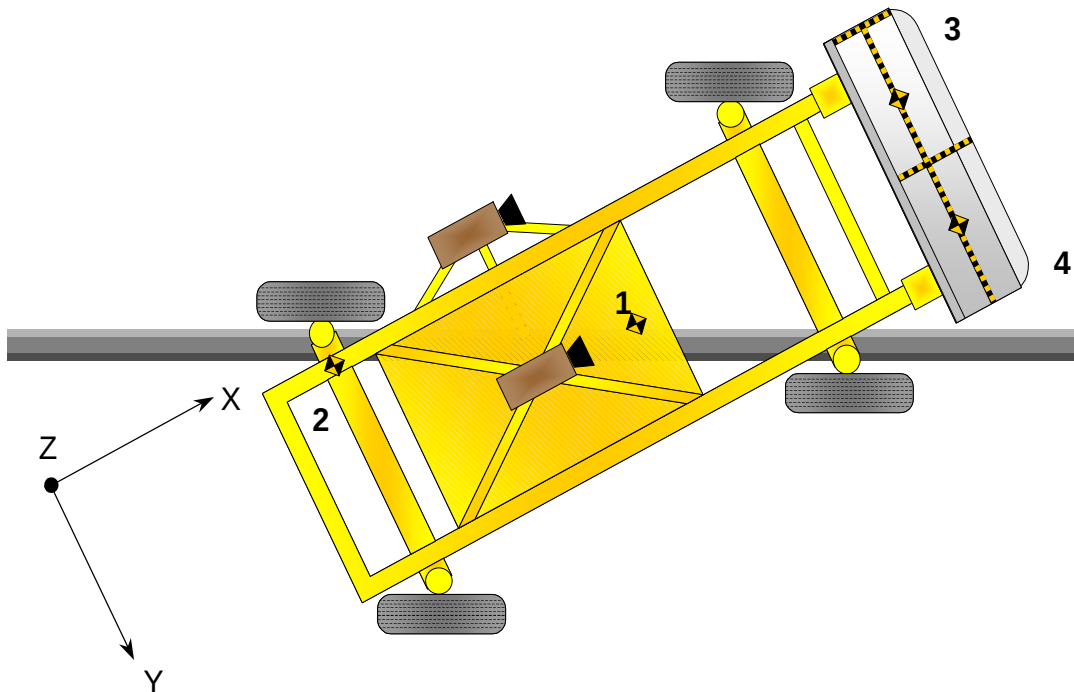
MDB ACCELEROMETER PEAK DATA AND LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)			Peak Values (G's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	MDB CG	-1195	0	430	X	2.2	126.6	-15.9	38.8
					Y	2.5	143.2	-6.9	22.4
					Z	7.8	146.1	-12.0	138.1
					RES	16.9	41.3		
2	MDB Rear	-2642	-593	608	X	2.3	156.0	-18.4	36.3
					Y	2.8	155.6	-7.2	23.1

Reference Points X - MDB Front Axle Y - MDB Centerline Z - Ground Plane

MDB BUMPER CONTACT SWITCH DATA

Loc. No.	Contact Switch Location	Units	Peak and 50% Crossing Point			
			Max	Time	50%	Time
3	MDB Left Bumper (T=0)	% F.S	100.0	0.0	50.0	0.0
4	MDB Right Bumper	% F.S.	100.5	21.4	50.3	-0.5



DATA SHEET NO. 15

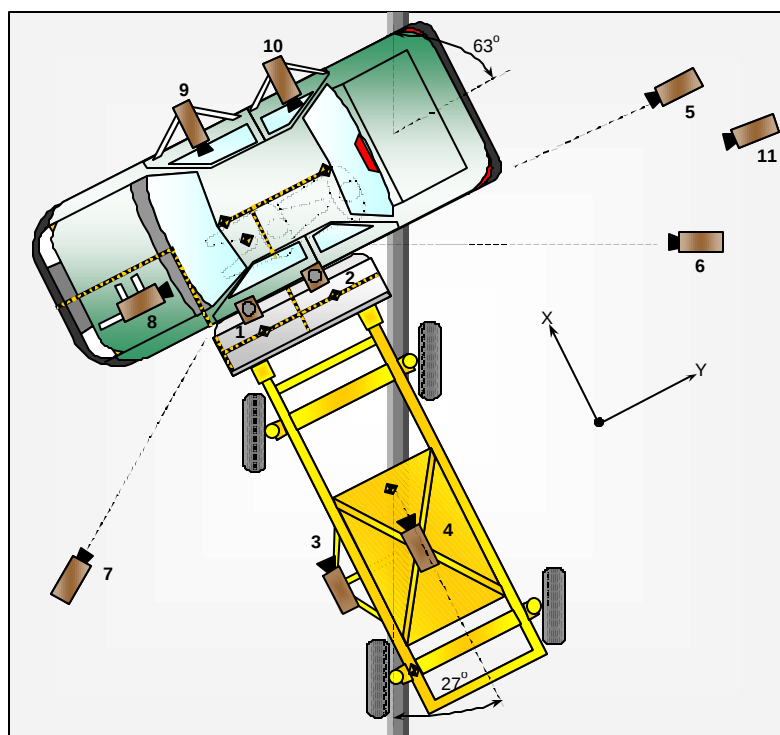
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01



No.	Camera View	Location (mm)			Angle (deg.)	Lens (mm)	Film Speed (fr./sec.)
		X	Y	Z			
1	Overhead Overall	1650	-760	5486	-90	10	
2	Overhead Close-up	-760	0	5790	-90	24	
3	MDB Onboard, Impact Point Close-Up	-2130	0	1140	-7	13	
4	MDB Onboard, Centerline of Impact	3050	-1650	1830	-11	13	
5	Right Side, Ground Level, Overall	0	-20940	740	-1	50	
6	Right Side, Ground Level, Close-up	-8840	-15510	740	0	80	
7	Left Side, Ground Level, Close-up	-2630	4680	1450	-7	13	
8	Vehicle Onboard Front SID, Front	530	760	1200	-7	19	
9	Vehicle Onboard Front SID, Side	1900	-1010	1030	-2	10	
10	Vehicle Onboard Rear SID, Side	1800	-1780	1030	-2	10	
11	Real Time Coverage	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET NO. 16

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

Test Date: 11/19/01

Test Time: 11:35 AM

Temperature at Time of Impact: 17.7 °C

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)
- D. Spillage Details: No leakage occurred

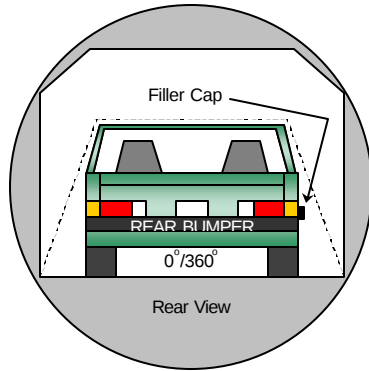
DATA SHEET NO. 17
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

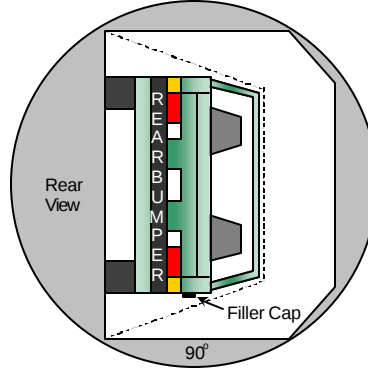
NHTSA No.: GM0006

Test Program: 55/28 km/h 90° Side Impact NCAP

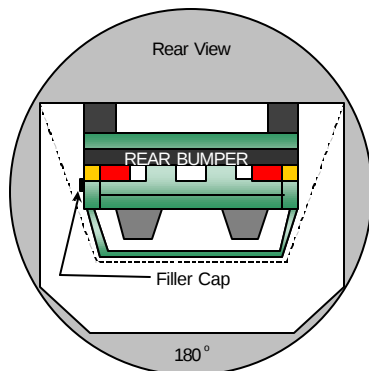
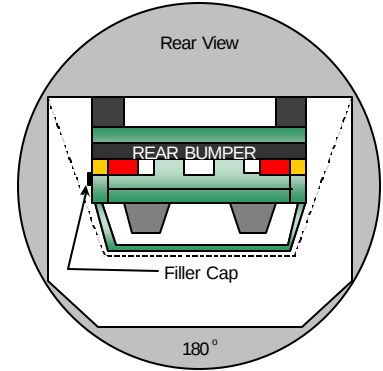
Test Date: 11/19/01



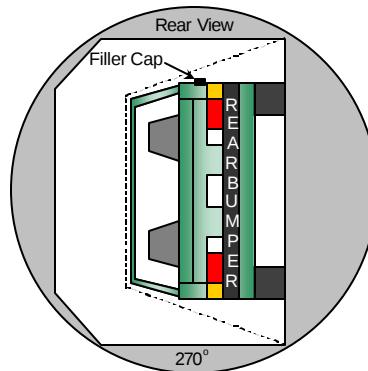
0° TO 90°



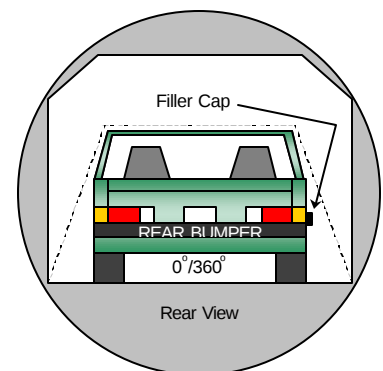
90° TO 180°



180° TO 270°



270° TO 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations.

No solvent leakage occurred during static rollover testing.

Rollover Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	80	300	0.0
90° TO 180°	78	300	0.0
180° TO 270°	79	300	0.0
270° TO 360°	78	300	0.0

APPENDIX A
PHOTOGRAPHS

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Figure A-1: Left Front, as Received



Figure A-2: Right Rear, as Received



TIRE - LOADING INFORMATION

OCCUPANTS				VEHICLE CAP. WT.	
FRT.	CTR.	RR.	TOTAL	KG	LBS
2	0	3	5	416	917

MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.
1G1ND52J32M579440

MODEL: ND69 NBA

	TIRE SIZE	SPEED RTG	COLD TIRE PRESSURE
FRT	P215/60R15	S	200KPA(29PSI)
RR	P215/60R15	S	180KPA(26PSI)
SPA	T125/70D15	M	420KPA(60PSI)

IF TIRES ARE HOT, ADD 28KPA(4PSI).

SEE OWNER'S MANUAL  FOR MORE INFORMATION.

Figure A-3: Vehicle Certification Label



MFD BY GENERAL MOTORS CORP

DATE
10/01

GVWR
1822 KG
4017 LB

GAWR FRT
1000 KG
2205 LB

GAWR RR
822 KG
1812 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR
VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN
EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

1G1ND52J32M579440

TYPE: PASS CAR

Figure A-4: Vehicle Tire Label



Figure A-5: Front View, Pre-Test



Figure A-6: Front View, Post-Test



Figure A-7: Rear View, Pre-Test



Figure A-8: Rear View, Post-Test



Figure A-9: Left (Impacted) Side View, Pre-Test



Figure A-10: Left (Impacted) Side View, Post-Test



Figure A-11: Overhead Close-up View at Impact Position, Pre-Test



Figure A-12: Overhead Overall View, Pre-Test



Figure A-13: Overhead Overall View, Post-Test



Figure A-14: MDB Left Side View at Impact Position, Pre-Test



Figure A-15: MDB Right Side View at Impact Position, Pre-Test



Figure A-16: Impact Point Target Close-up, Pre-Test



Figure A-17: Impact Point Target Close-up, Post-Test



Figure A-18: Left Front Door Closed, Pre-Test



Figure A-19: Left Front Door Closed, Post-Test



Figure A-20: Left Rear Door Closed, Pre-Test



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Figure A-22: Driver Dummy Left Side with Door Open, Pre-Test



Figure A-23: Driver Dummy Left Side, Pre-test



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Figure A-25: Driver Dummy Clearance, Pre-Test



Figure A-26: Driver Dummy Clearance, Post-Test



Figure A-27: Driver Dummy Inside View, Pre-Test



Figure A-28: Driver Dummy Inside View, Post-Test



Figure A-29: Driver Door Inside View, Pre-Test



Figure A-30: Driver Dummy Contact Points Inside View, Post-Test



Figure A-31: Passenger Dummy Left Side with Door Open, Pre-Test



Figure A-32: Passenger Dummy Left Side, Pre-Test



Figure A-33: Passenger Dummy Left Side, Post-Test



Figure A-34: Passenger Dummy Clearance, Pre-Test



Figure A-35: Passenger Dummy Clearance, Post-Test



Figure A-36: Passenger Dummy Inside View, Pre-Test



Figure A-37: Passenger Dummy Inside View, Post-Test



Figure A-38: Passenger Door Inside View, Pre-Test



Figure A-39: Passenger Dummy Contact Points Inside View, Post-Test



Figure A-40: Front View of Deformable Barrier, Pre-Test

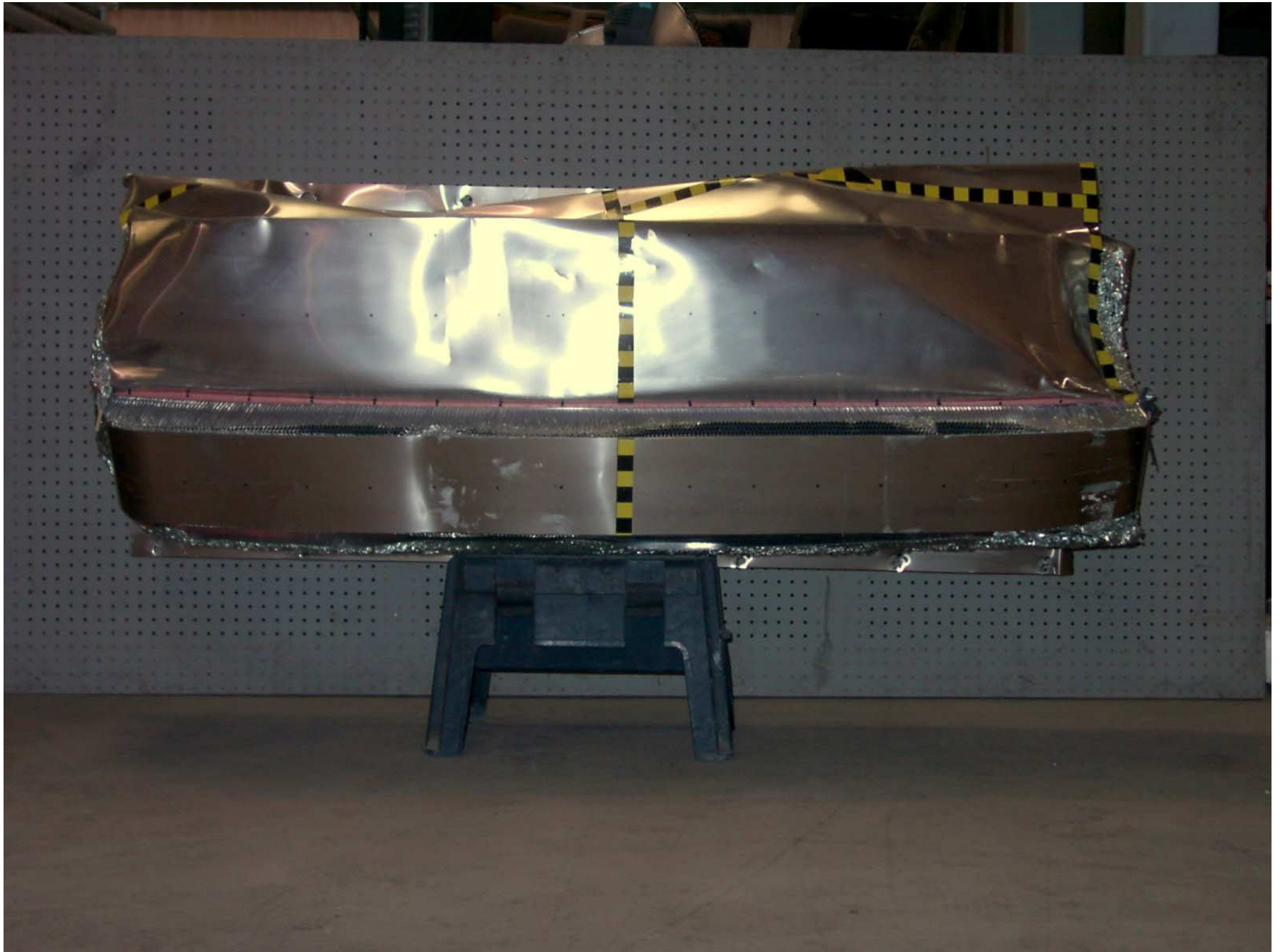


Figure A-41: Front View of Deformable Barrier, Post-Test

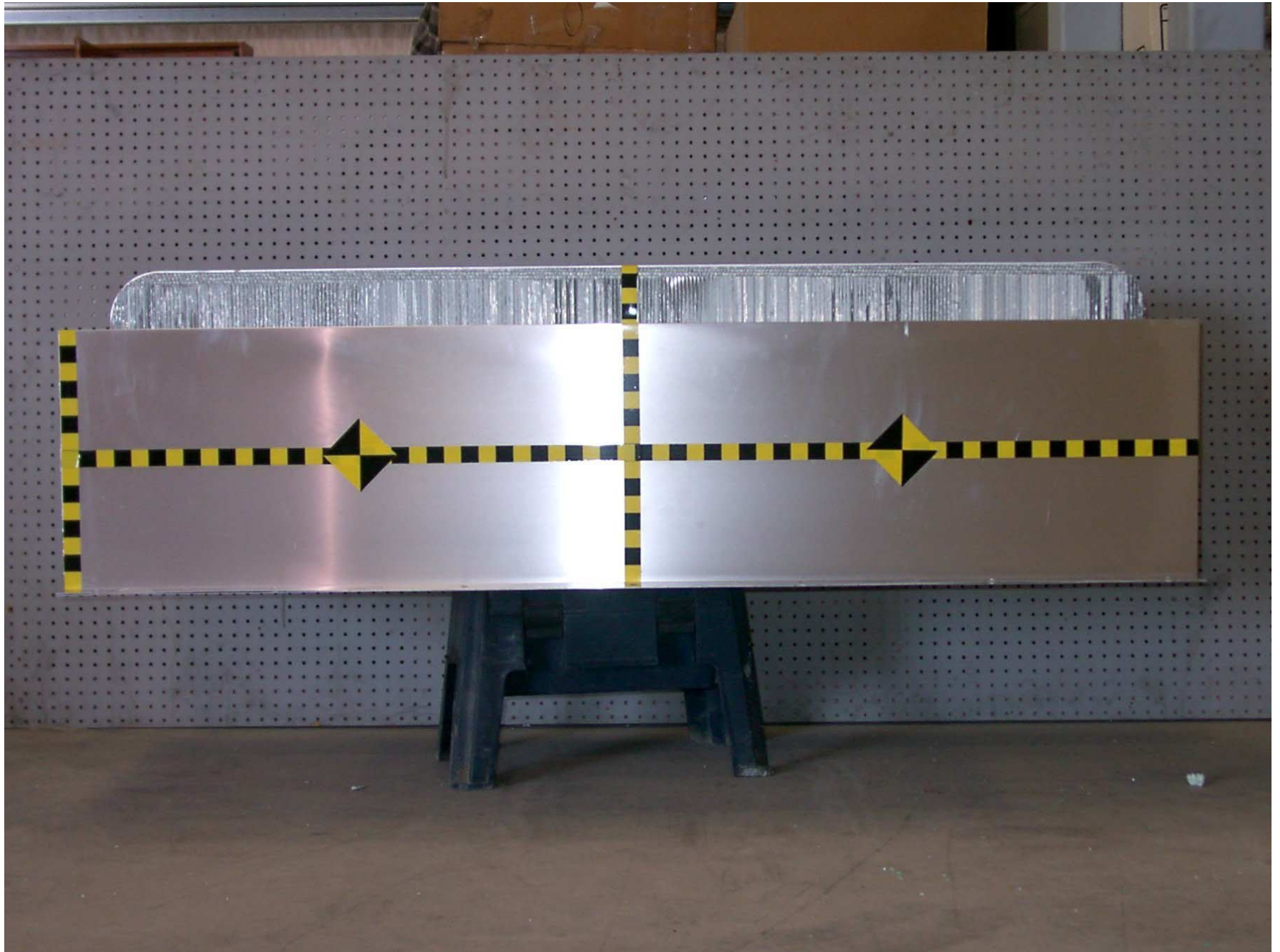


Figure A-42: Top View of Deformable Barrier, Pre-Test

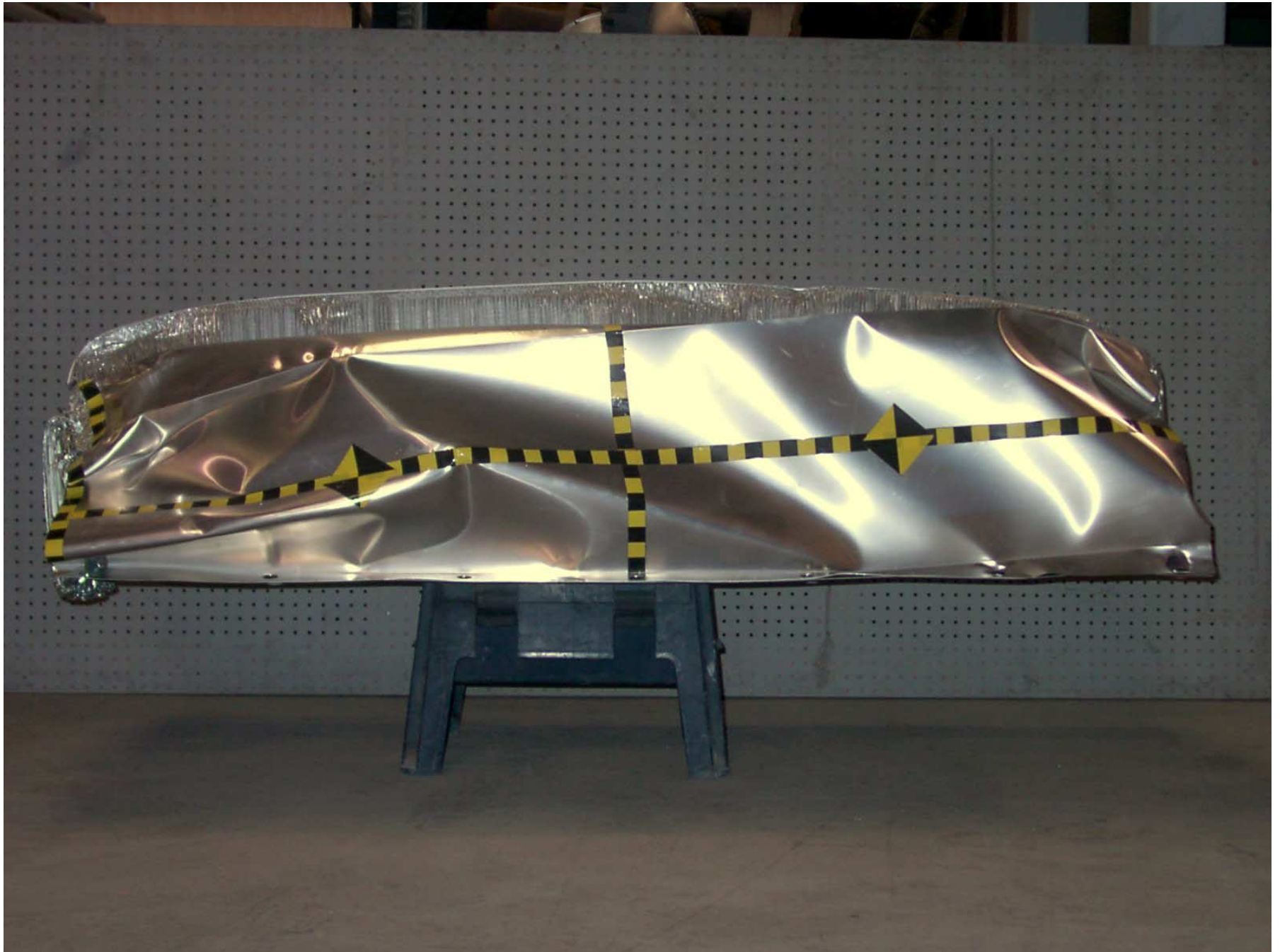


Figure A-43: Top View of Deformable Barrier, Post-Test



Figure A-44: Right Side View of Deformable Barrier, Pre-Test



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Figure A-46: Left Side View of Deformable Barrier, Pre-Test



Figure A-47: Left Side View of Deformable Barrier, Post-Test



Figure A-48: Vehicle on Rollover Device, Top View



Figure A-49: Vehicle During Impact

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SID, VEHICLE, AND MDB RESPONSE DATA

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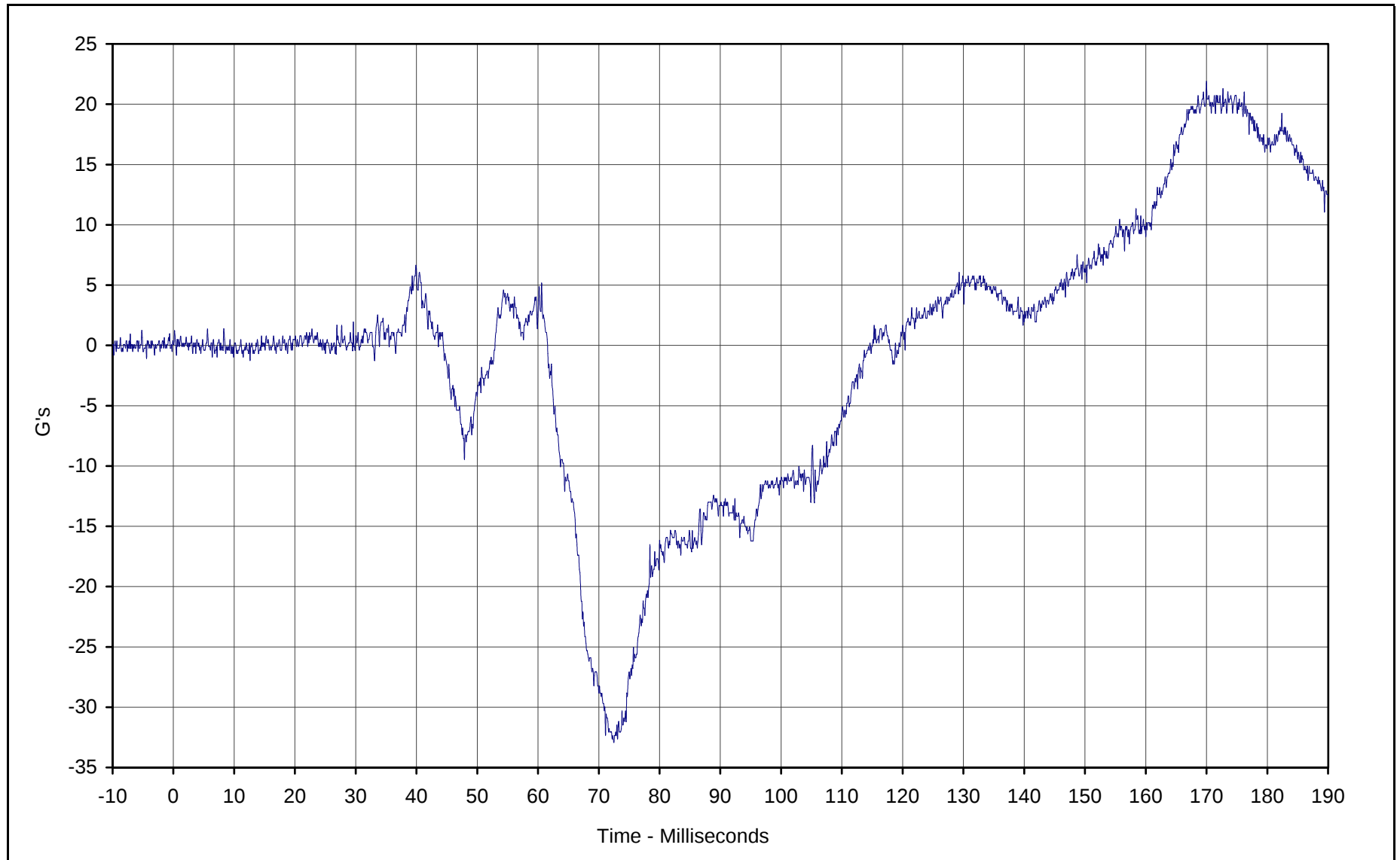
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LIST OF DATA PLOTS, FIR FILTER DATA

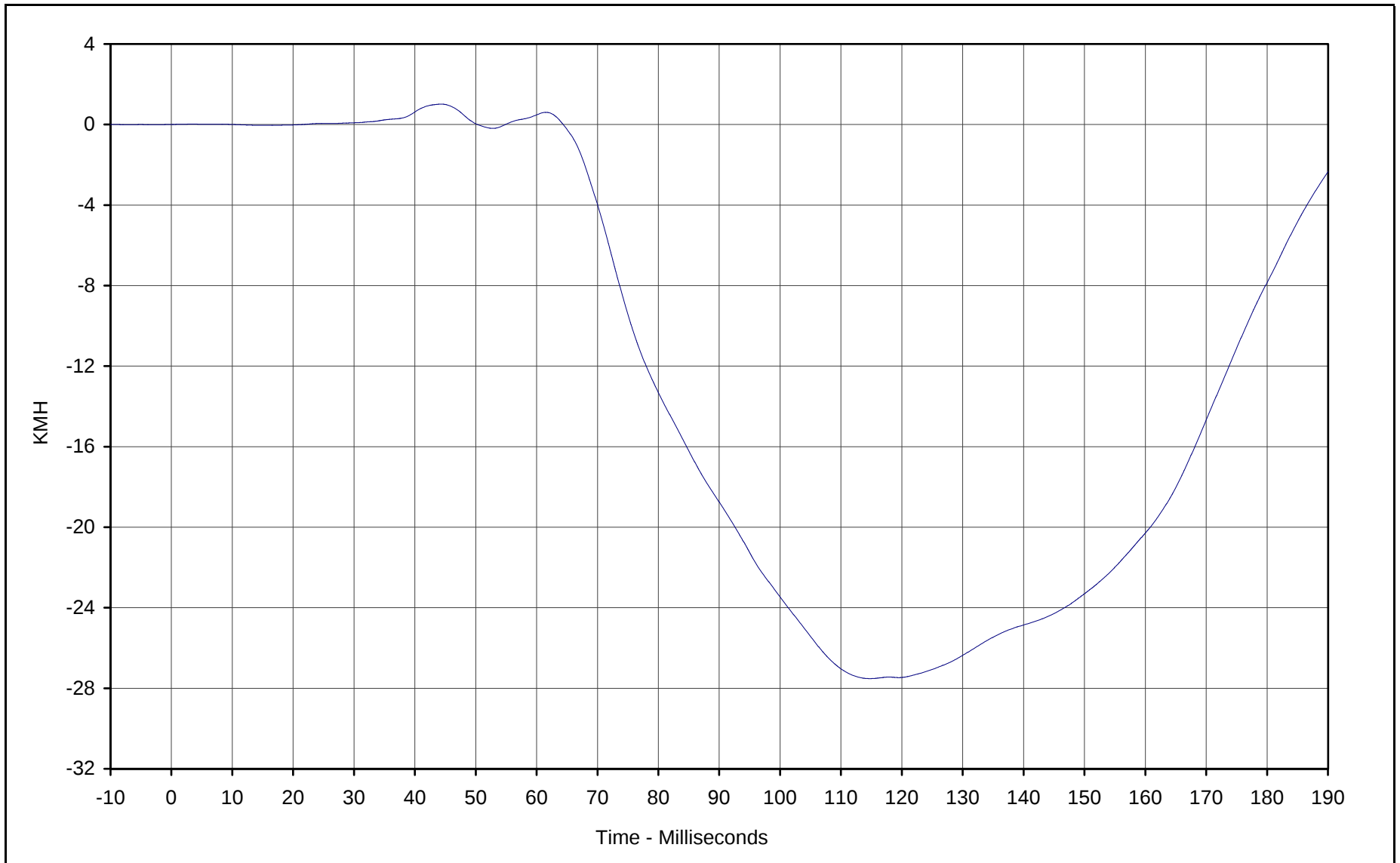
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Curve Description: Driver Head CG X
Maximum Value: 21.9 at 170.0 Milliseconds
Minimum Value: -32.9 at 72.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-001

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

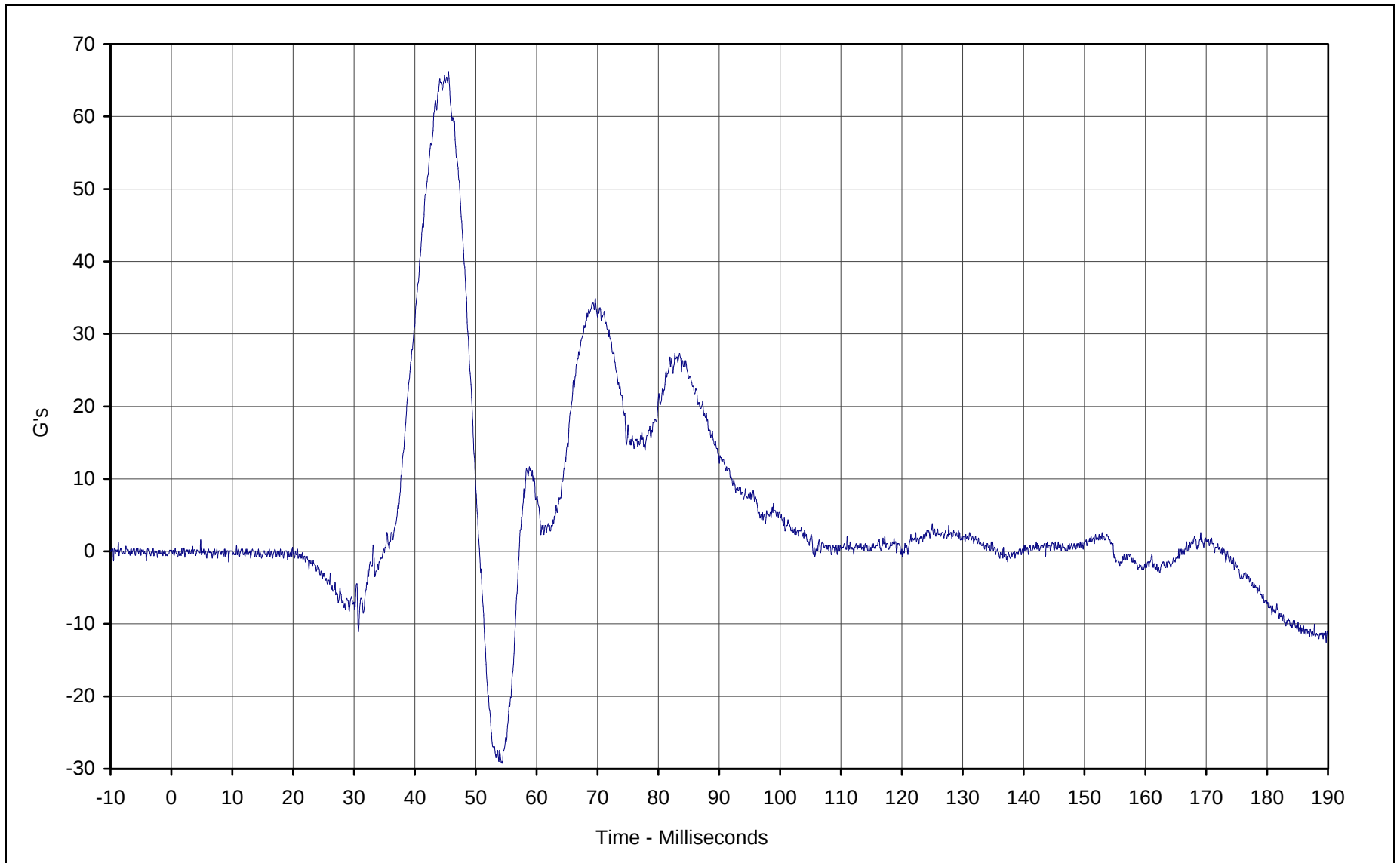




Curve Description: Driver Head CG X Velocity
Maximum Value: 1.0 at 44.3 Milliseconds
Minimum Value: -27.5 at 114.7 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-001

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

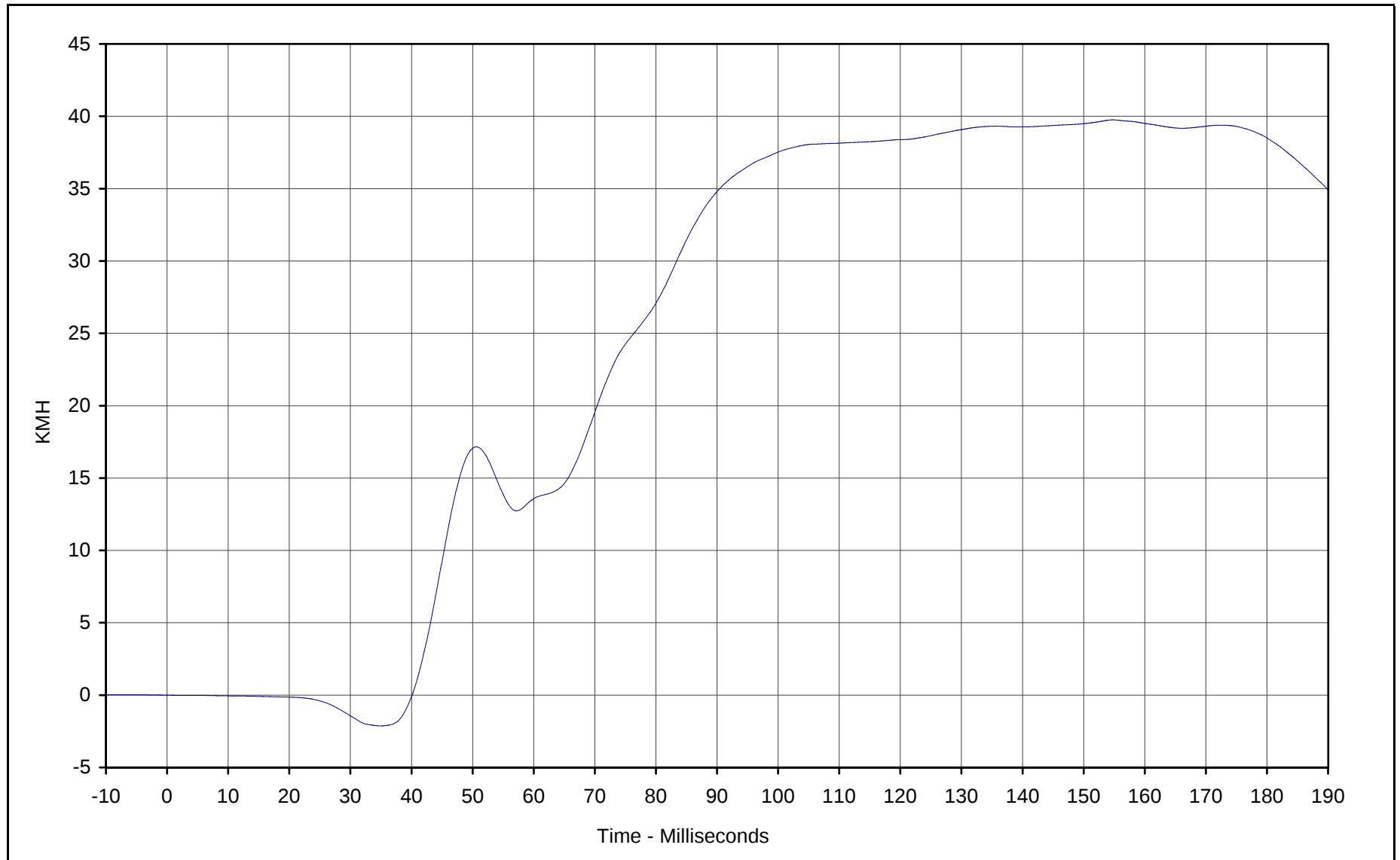




Curve Description: Driver Head CG Y
Maximum Value: 66.2 at 45.5 Milliseconds
Minimum Value: -29.2 at 54.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-002

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

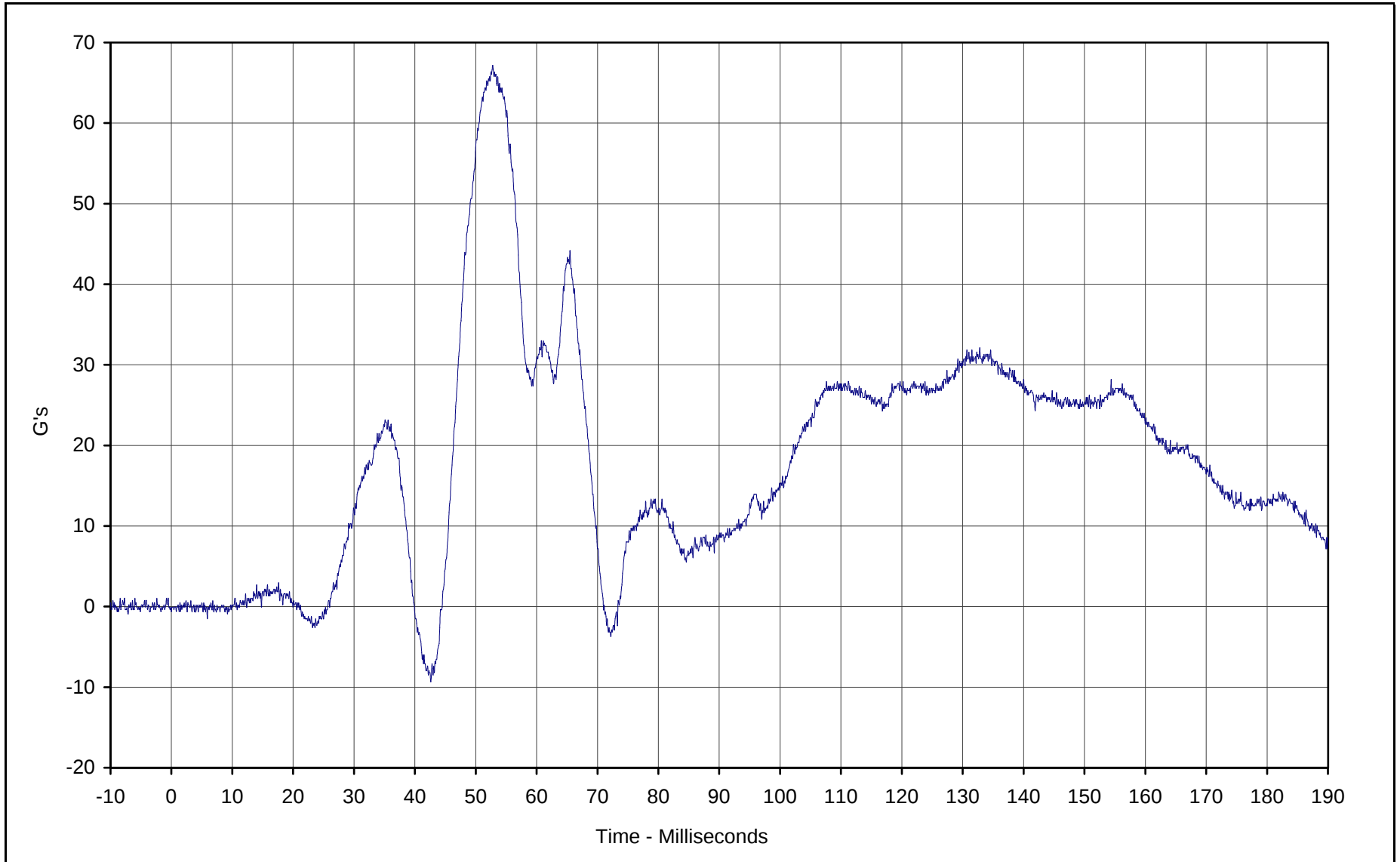




Curve Description: Driver Head CG Y Velocity
Maximum Value: 39.8 at 154.8 Milliseconds
Minimum Value: -2.1 at 34.9 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-002

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

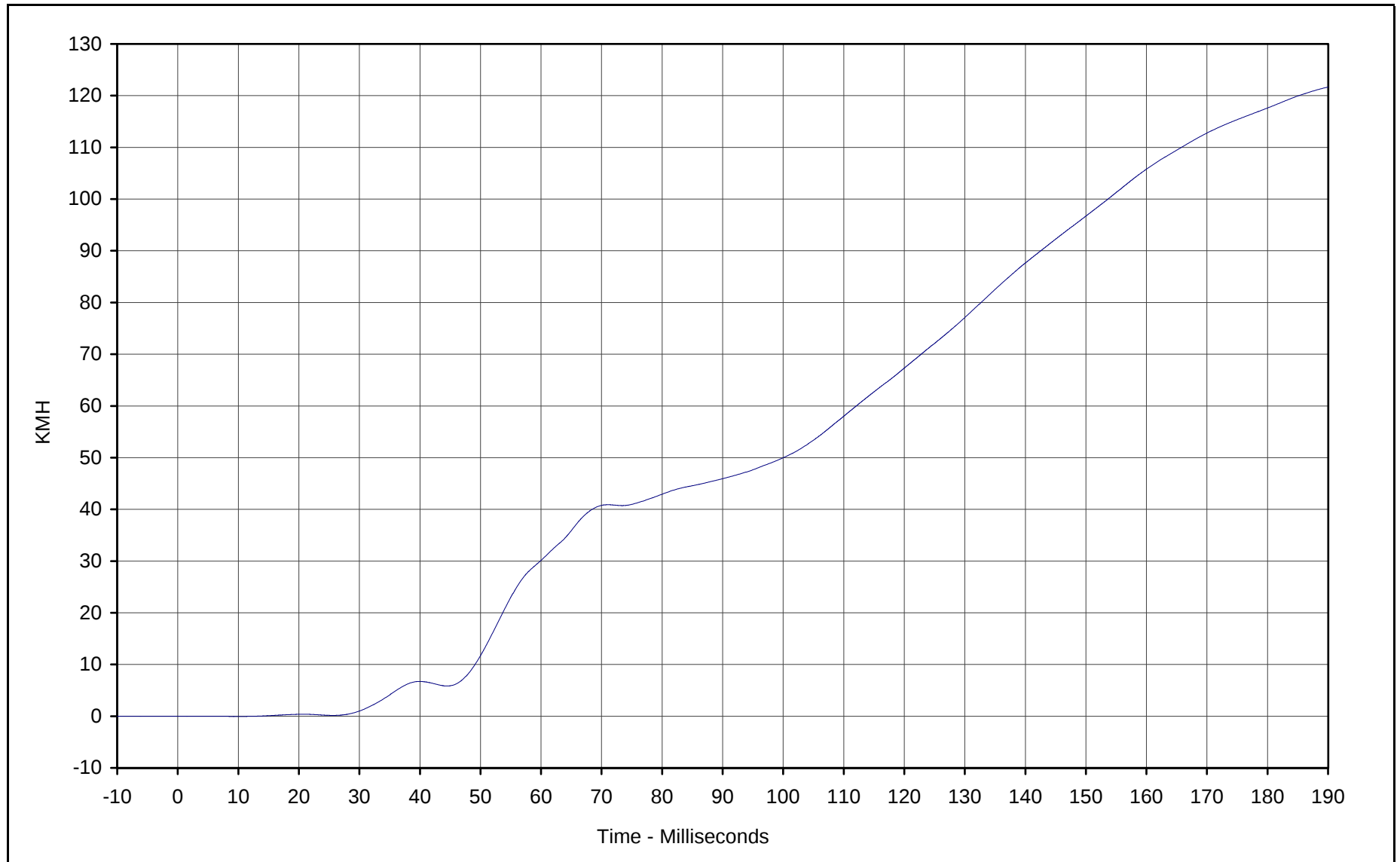




Curve Description: Driver Head CG Z
Maximum Value: 67.2 at 52.8 Milliseconds
Minimum Value: -9.4 at 42.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-003

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

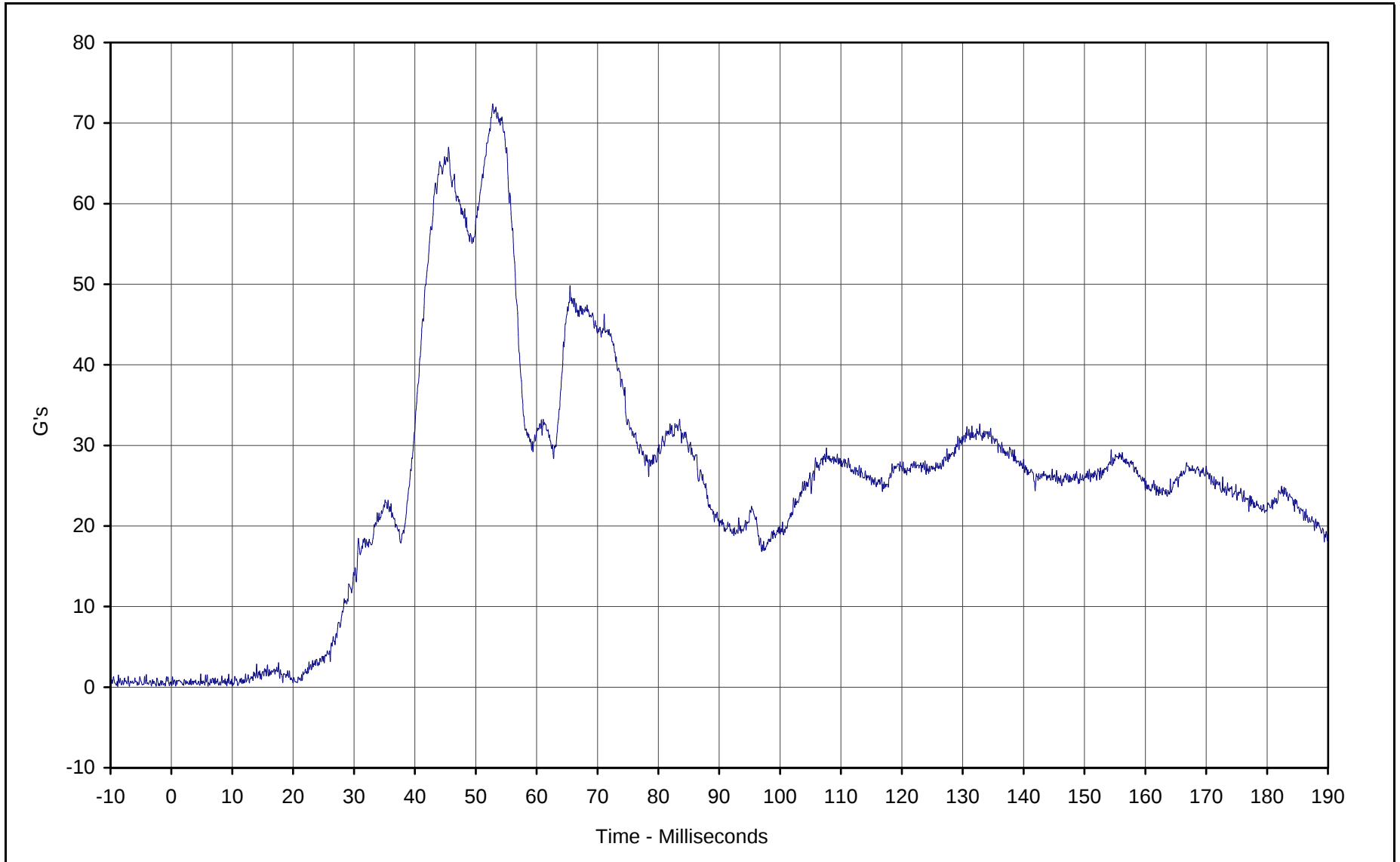




Curve Description: Driver Head CG Z Velocity
Maximum Value: 121.6 at 189.9 Milliseconds
Minimum Value: 0.0 at 10.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-003

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

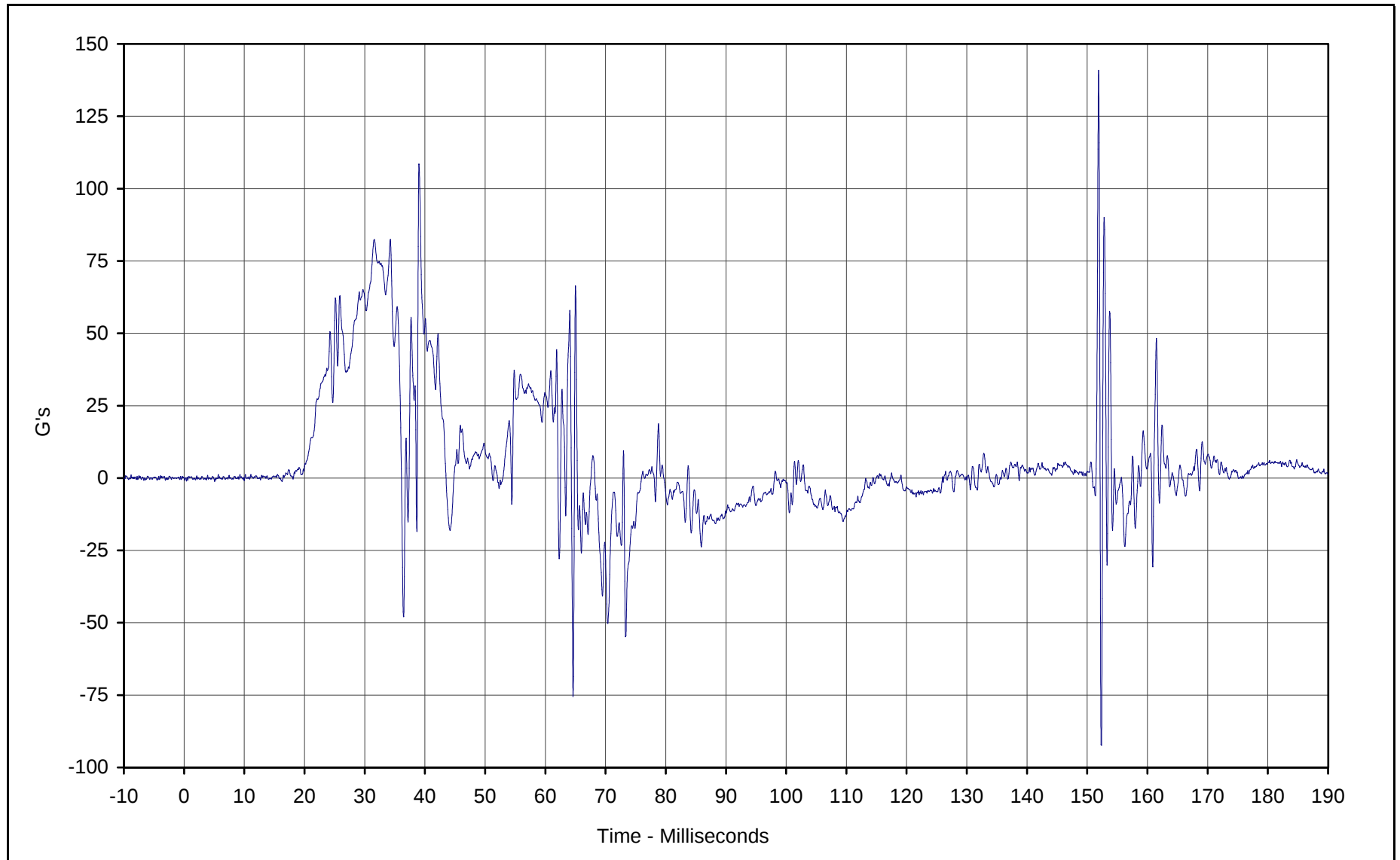




Curve Description: Driver Head CG Resultant
Maximum Value: 72.4 at 52.8 Milliseconds
Minimum Value: 0.1 at 0.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: RES-001

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

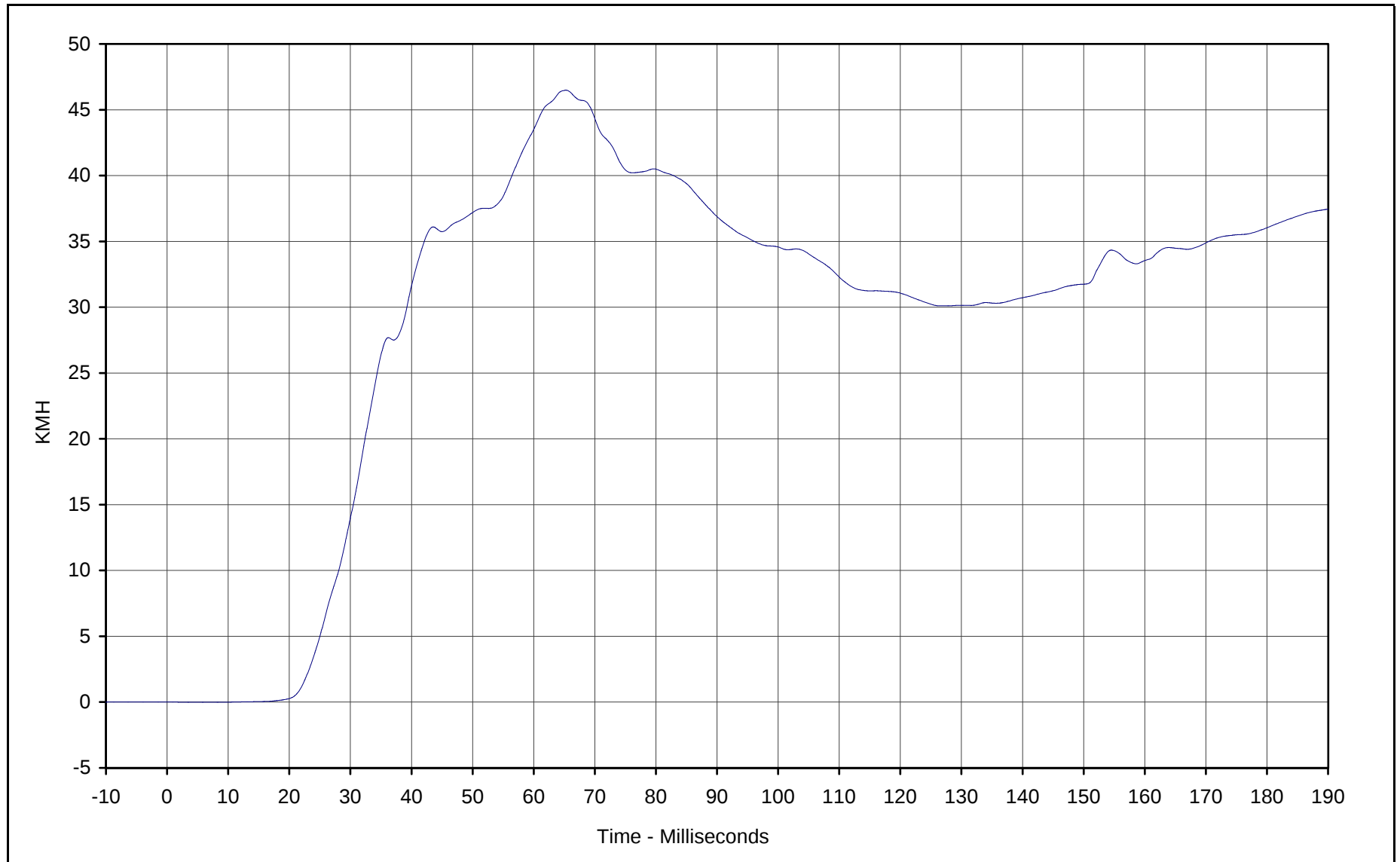




Curve Description: Driver Upper Rib Primary Y
Maximum Value: 140.9 at 151.9 Milliseconds
Minimum Value: -92.3 at 152.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-004

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Upper Rib Primary Y Velocity

Maximum Value: 46.5 at 65.3 Milliseconds

Minimum Value: 0.0 at 5.8 Milliseconds

SAE Filter Class: 180

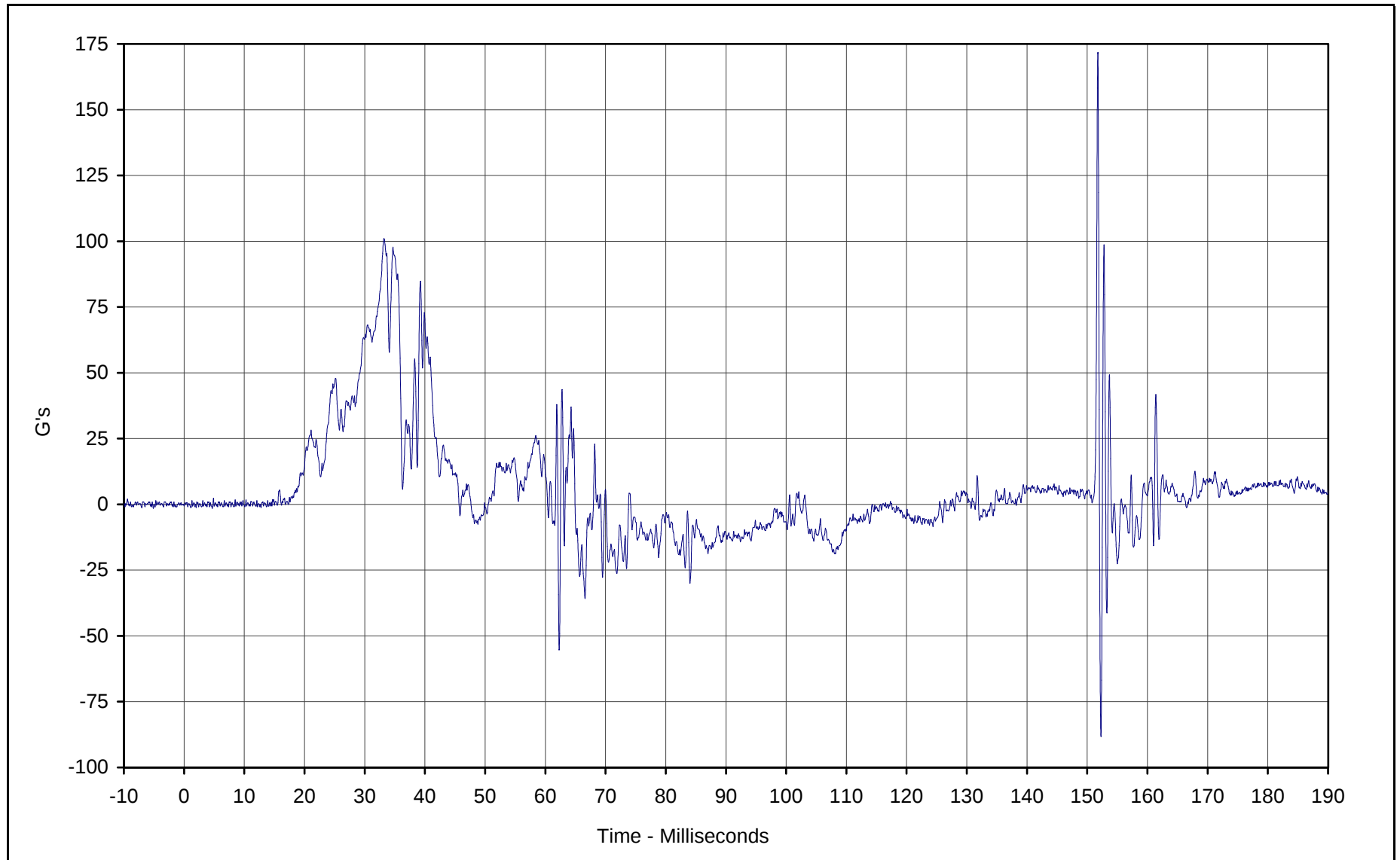
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Curve Number: IN1-004

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

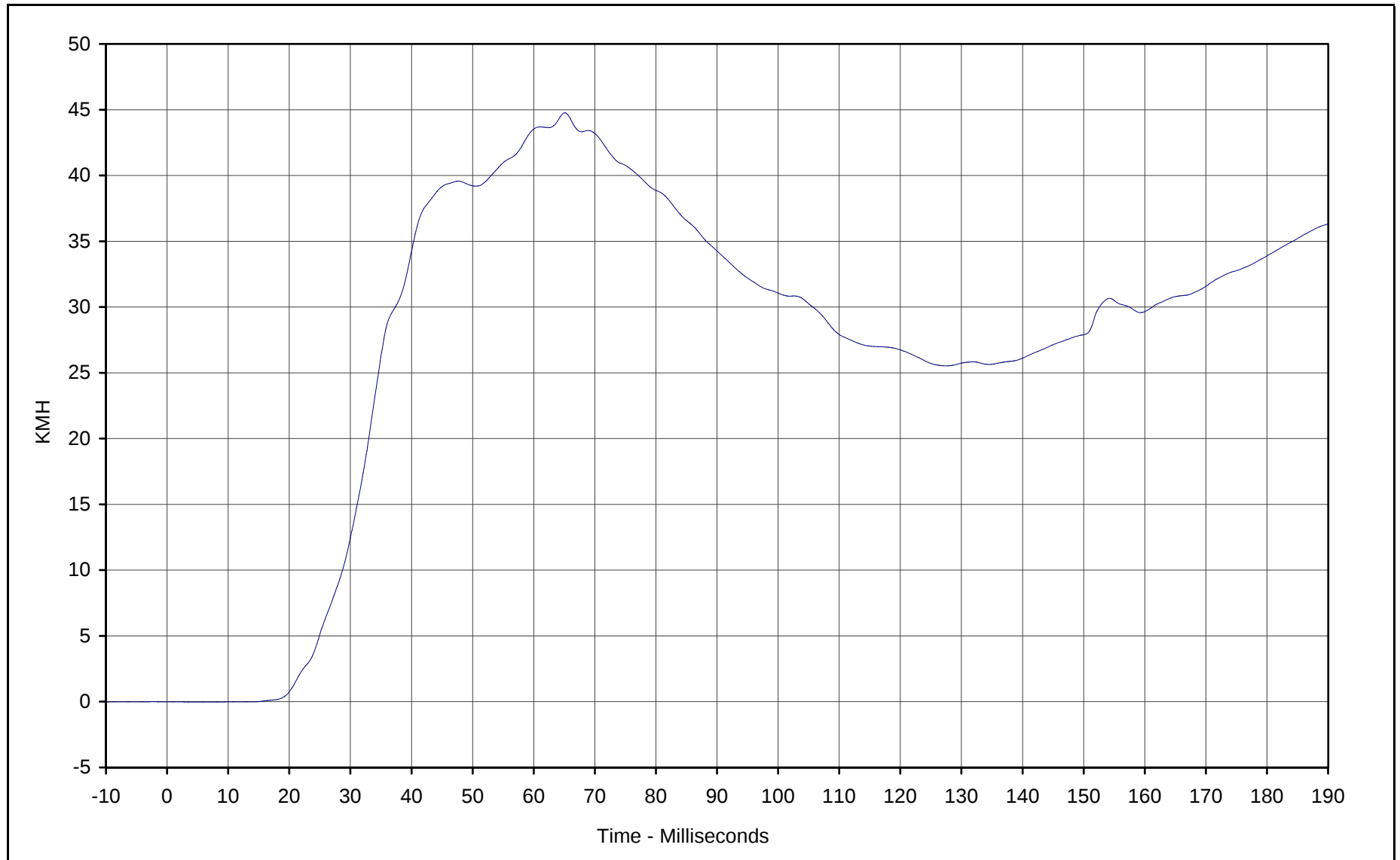




Curve Description: Driver Lower Rib Primary Y
Maximum Value: 171.2 at 151.8 Milliseconds
Minimum Value: -88.2 at 152.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-005

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Lower Rib Primary Y Velocity

Maximum Value: 44.8 at 65.1 Milliseconds

Minimum Value: 0.0 at 7.4 Milliseconds

SAE Filter Class: 180

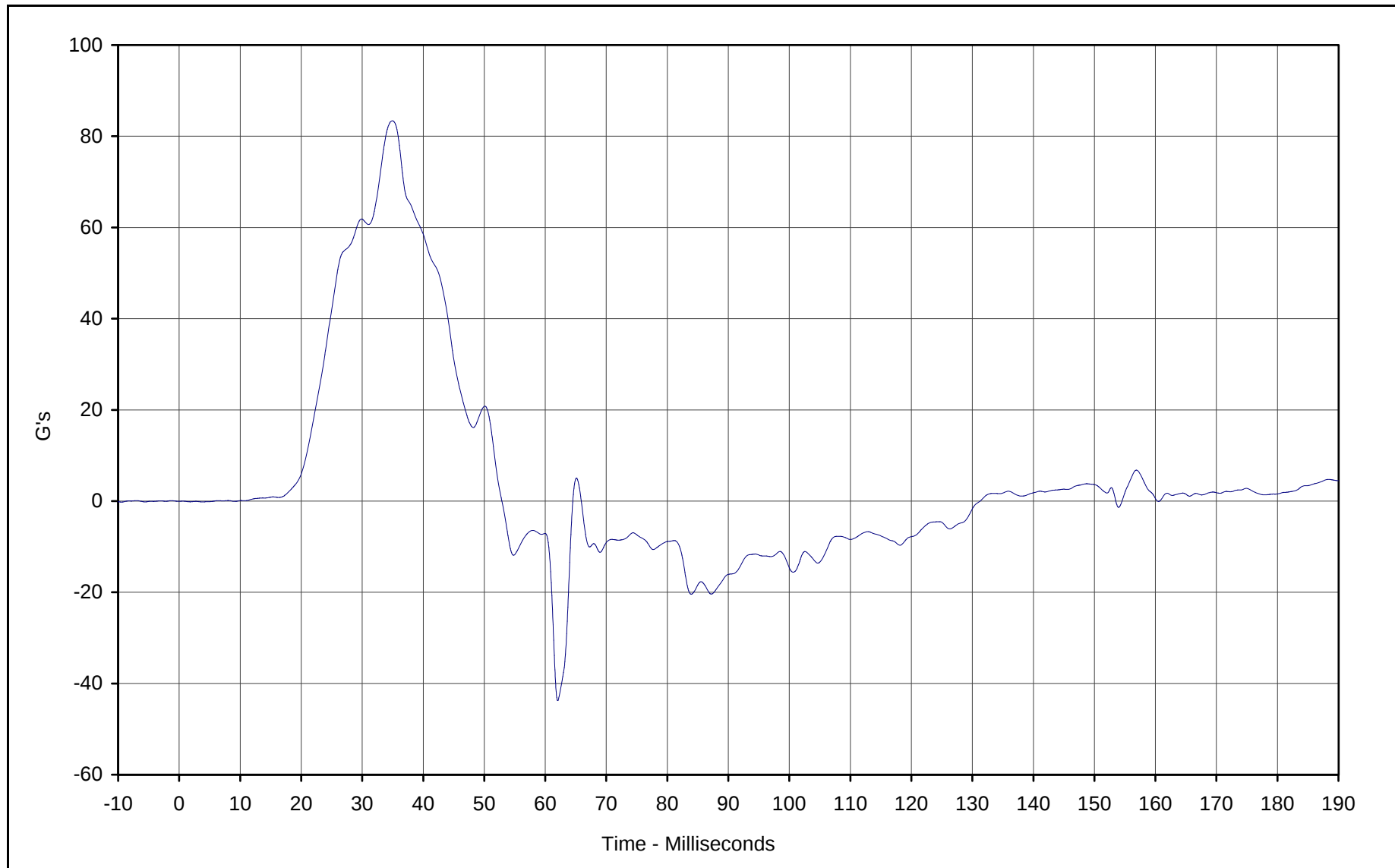
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Curve Number: IN1-005

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

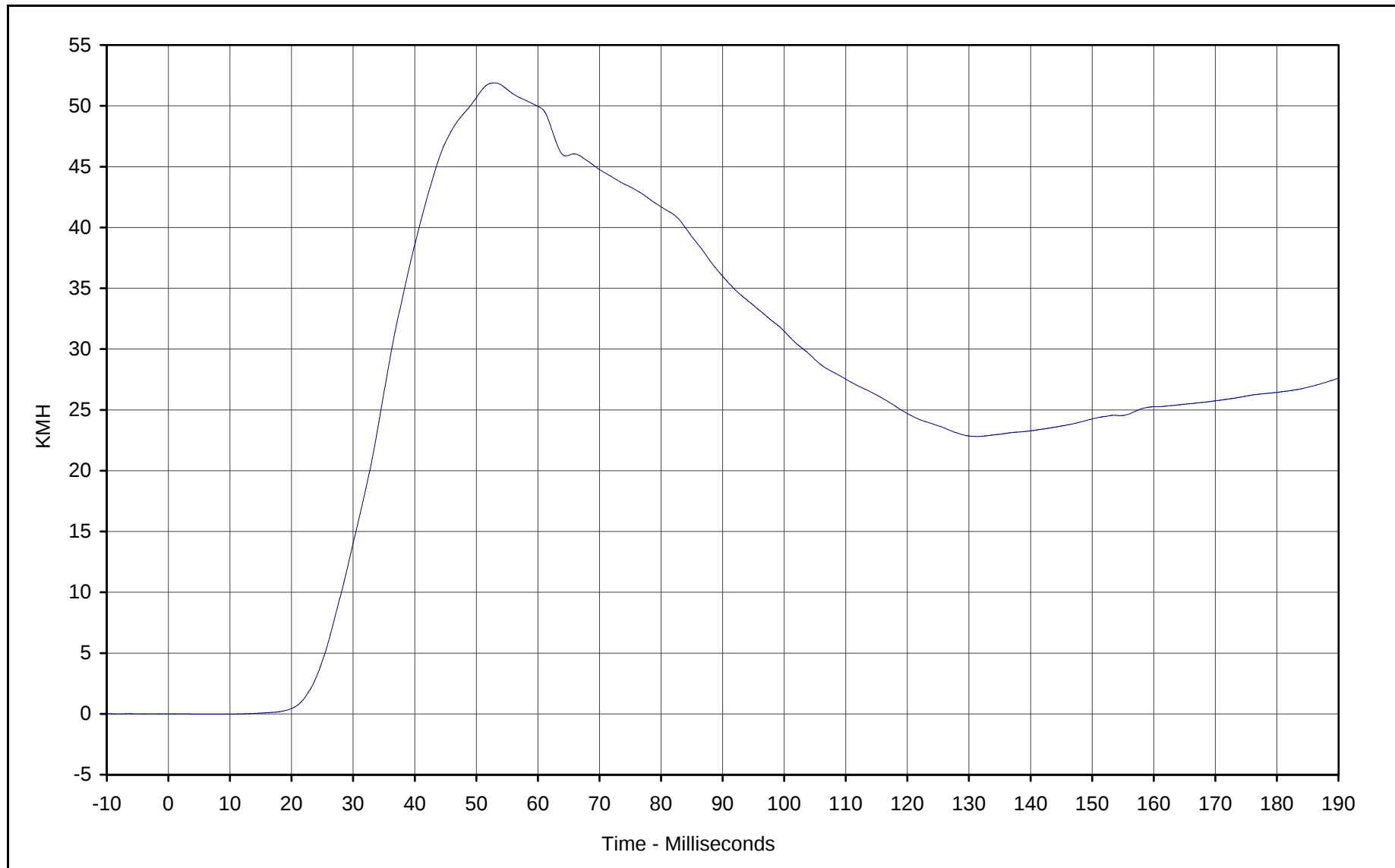




Curve Description: Driver Lower Spine Primary Y
Maximum Value: 83.4 at 34.9 Milliseconds
Minimum Value: -43.7 at 62.1 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: FIL-006

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Lower Spine Primary Y Velocity

Maximum Value: 51.9 at 52.9 Milliseconds

Minimum Value: 0.0 at 5.8 Milliseconds

SAE Filter Class: 180

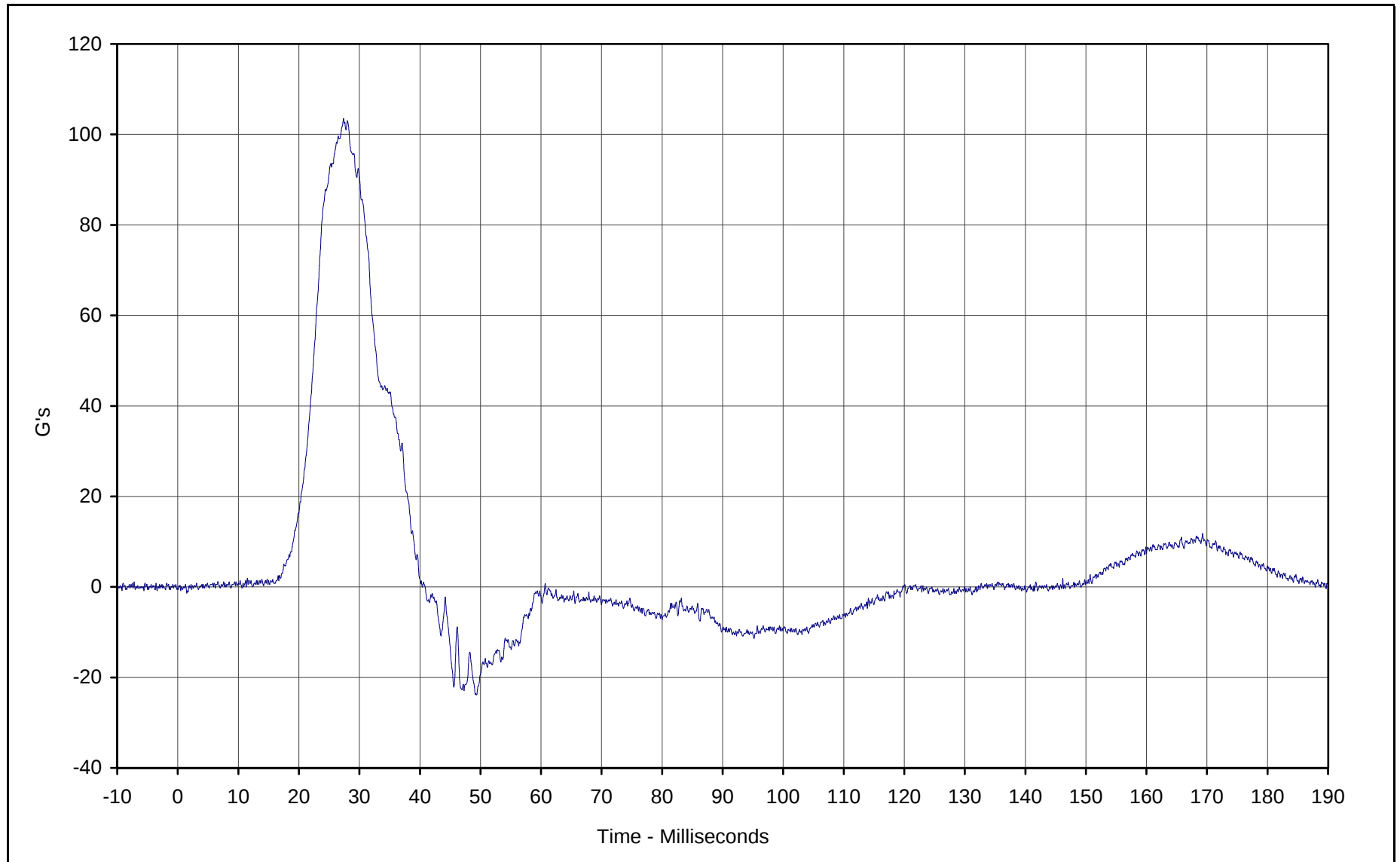
Date of Test: 11/19/01

Curve Number: IN1-006

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

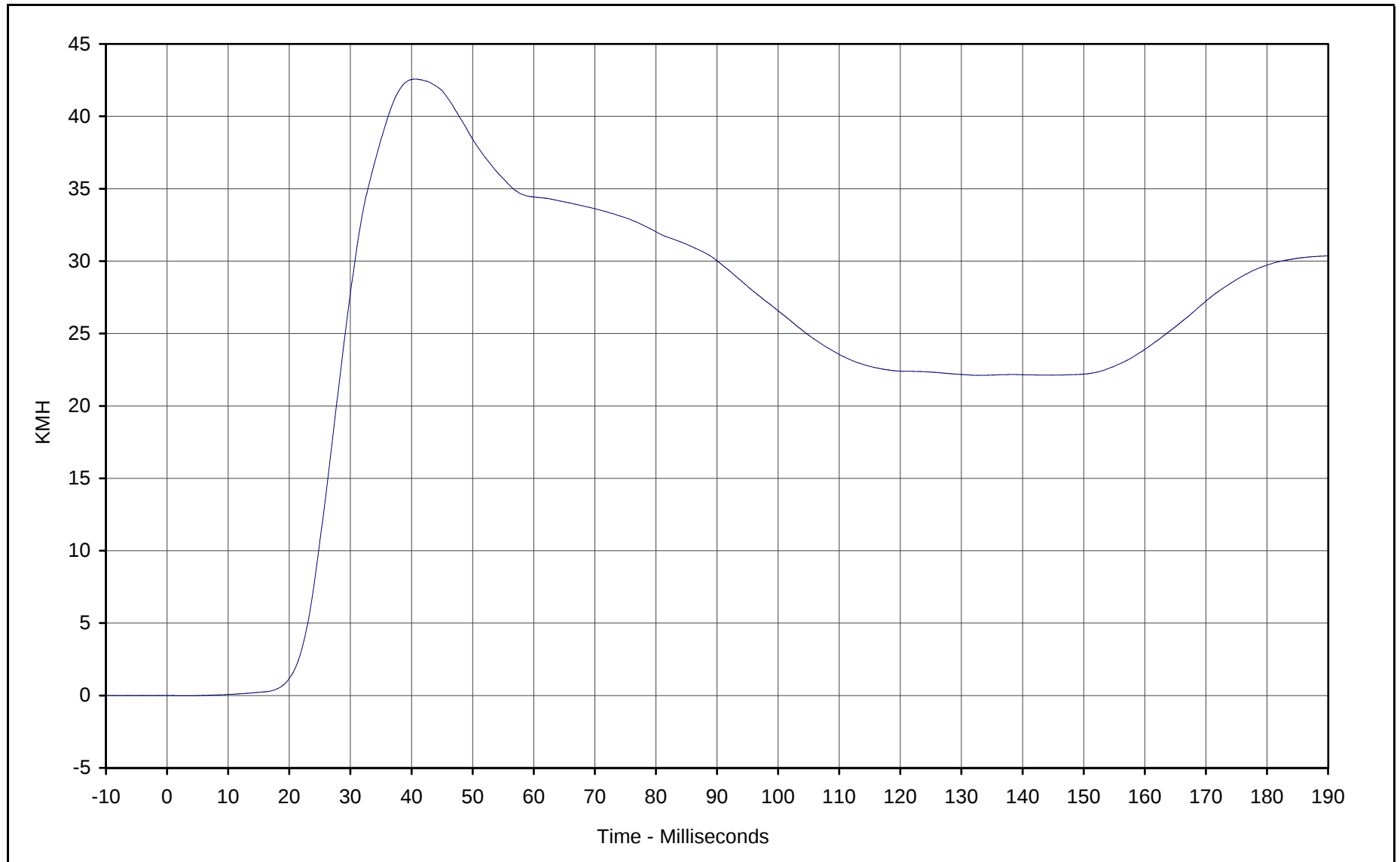




Curve Description: Driver Pelvis Primary Y
Maximum Value: 103.5 at 27.4 Milliseconds
Minimum Value: -23.8 at 49.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-007

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

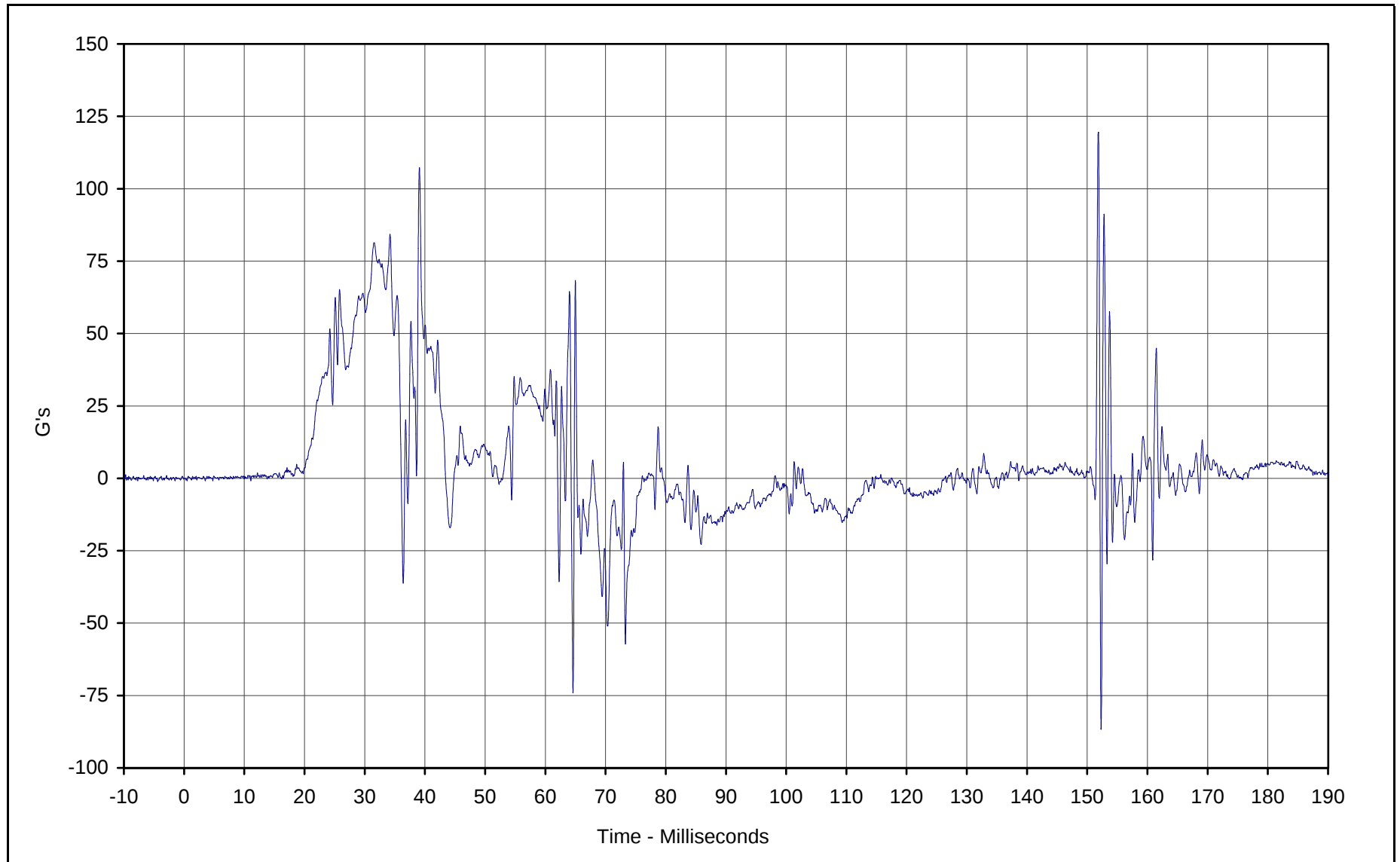




Curve Description: Driver Pelvis Primary Y Velocity
Maximum Value: 42.6 at 40.6 Milliseconds
Minimum Value: 0.0 at 2.5 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-007

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

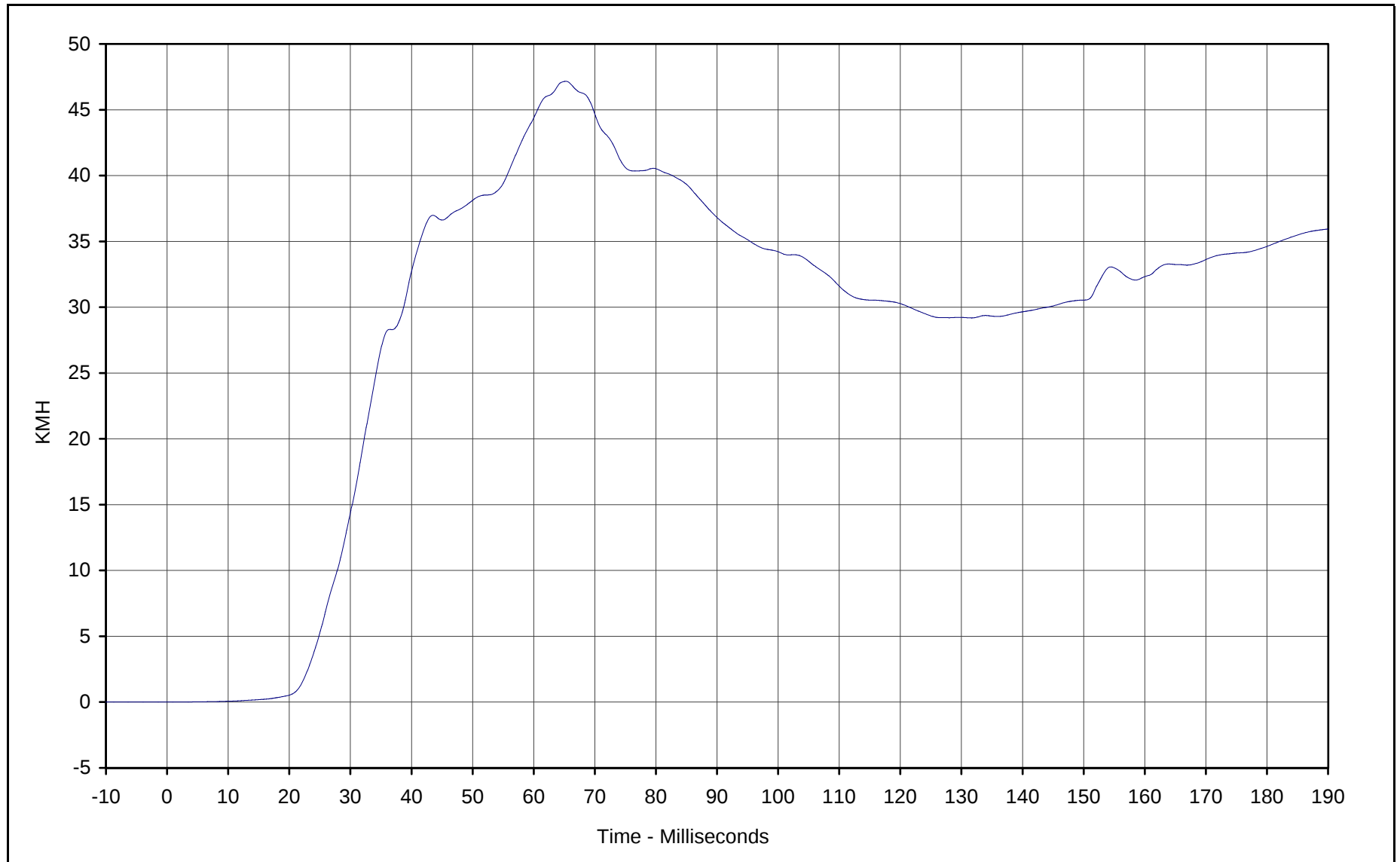




Curve Description: Driver Upper Rib Redundant Y
Maximum Value: 119.4 at 151.9 Milliseconds
Minimum Value: -86.2 at 152.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-008

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Upper Rib Redundant Y Velocity

Maximum Value: 47.2 at 65.2 Milliseconds

Minimum Value: 0.0 at 0.5 Milliseconds

SAE Filter Class: 180

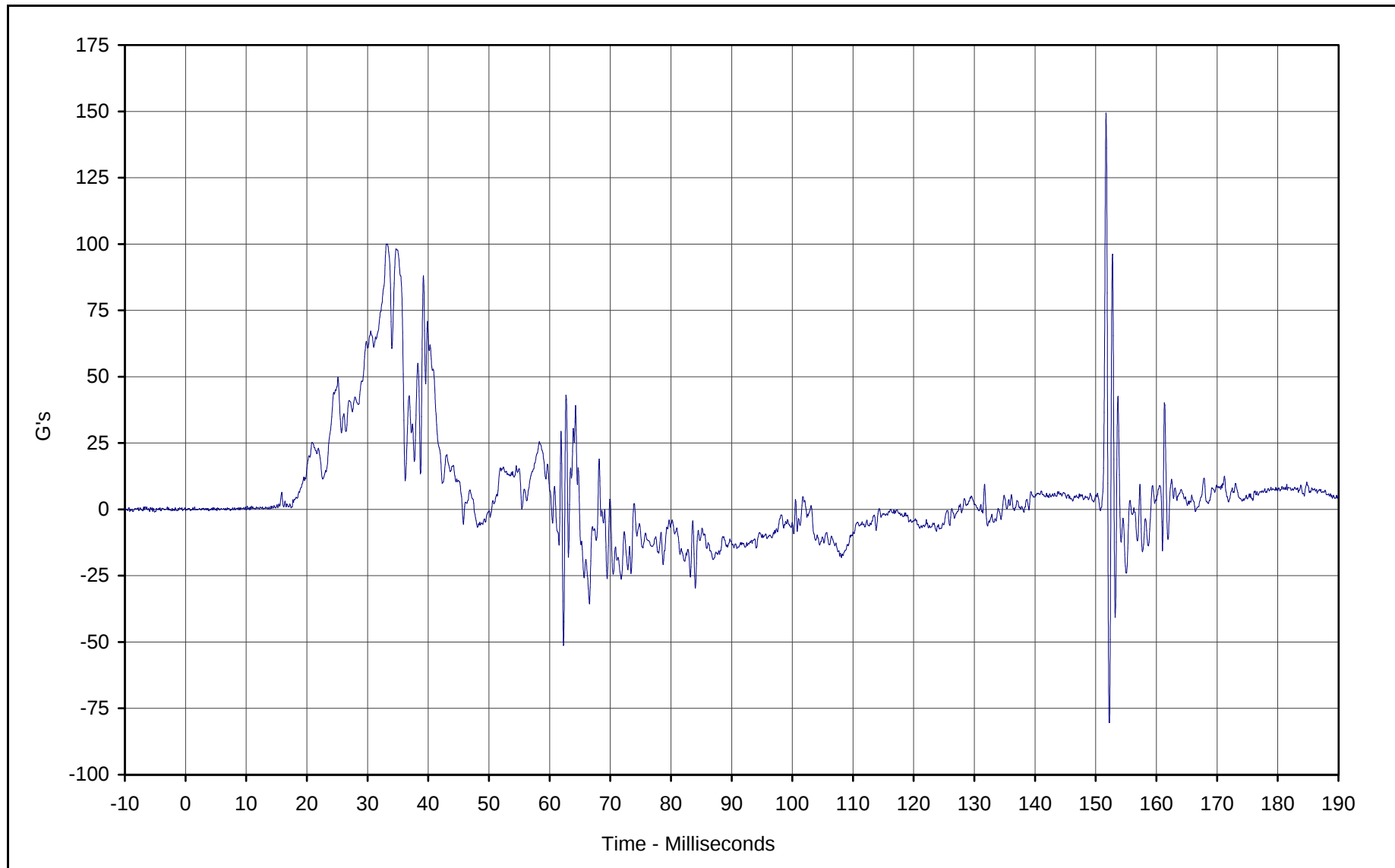
Date of Test: 11/19/01

Curve Number: IN1-008

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

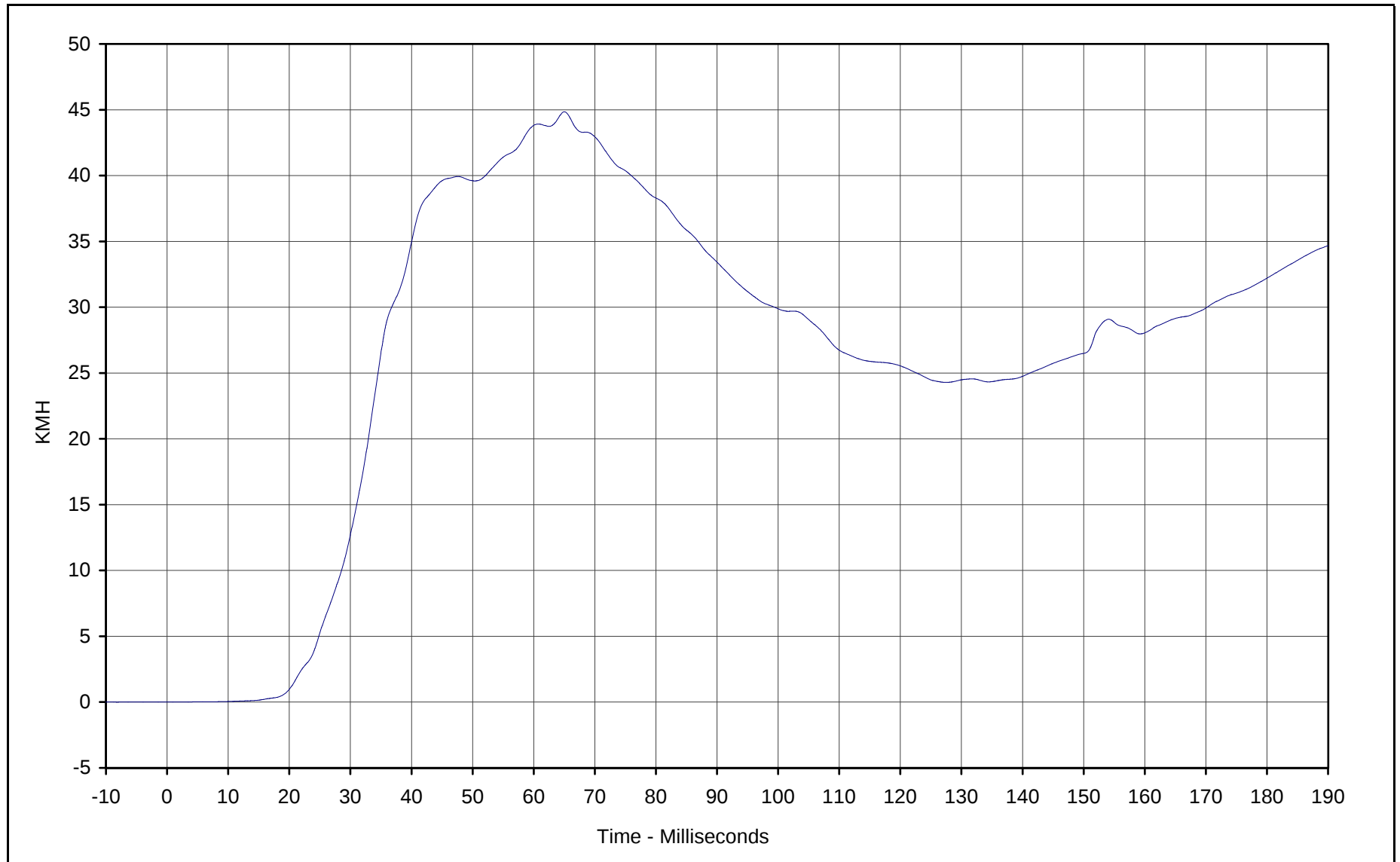




Curve Description: Driver Lower Rib Redundant Y
Maximum Value: 149.2 at 151.7 Milliseconds
Minimum Value: -80.3 at 152.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-009

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Lower Rib Redundant Y Velocity

Maximum Value: 44.8 at 65.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

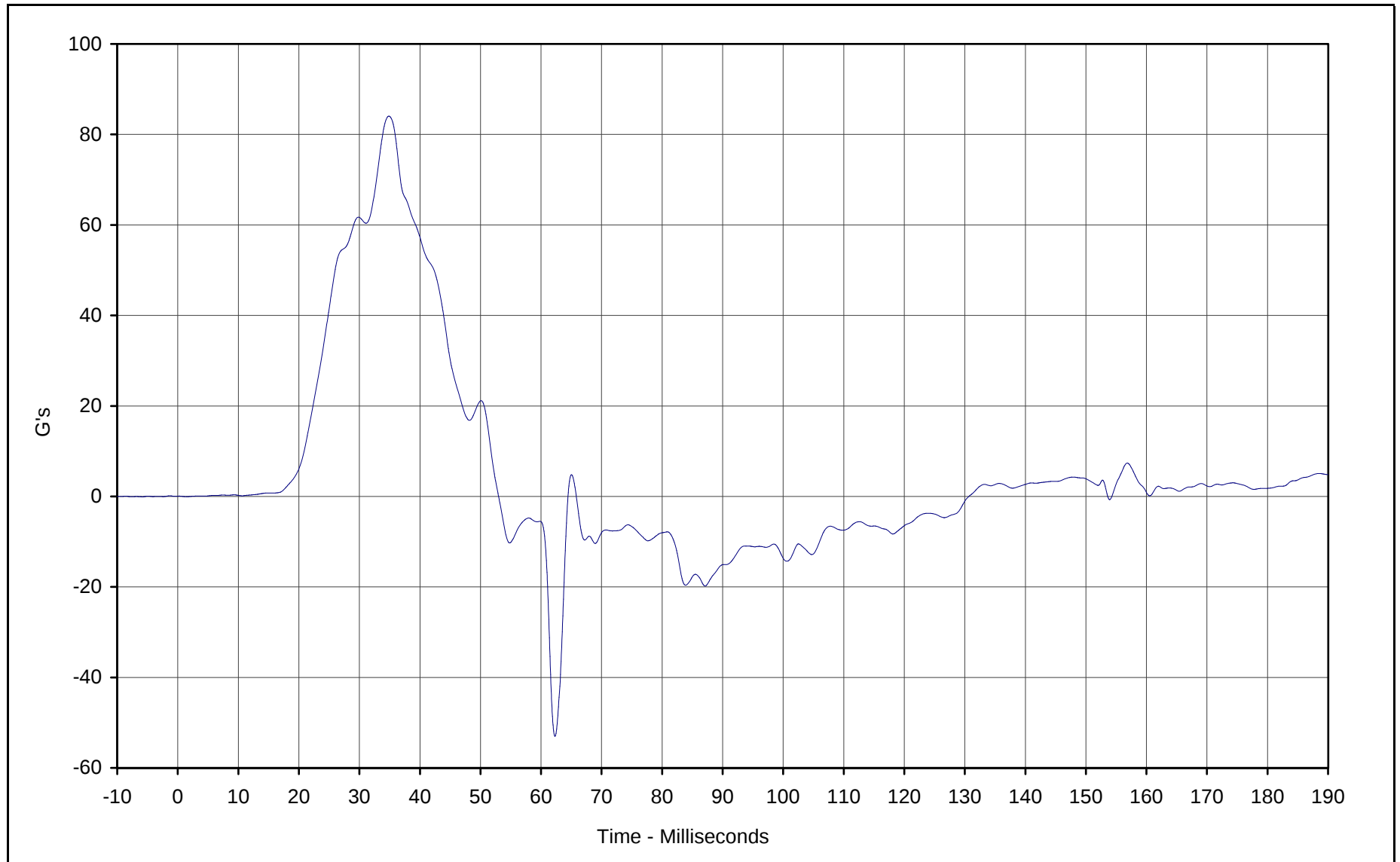
Date of Test: 11/19/01

Curve Number: IN1-009

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

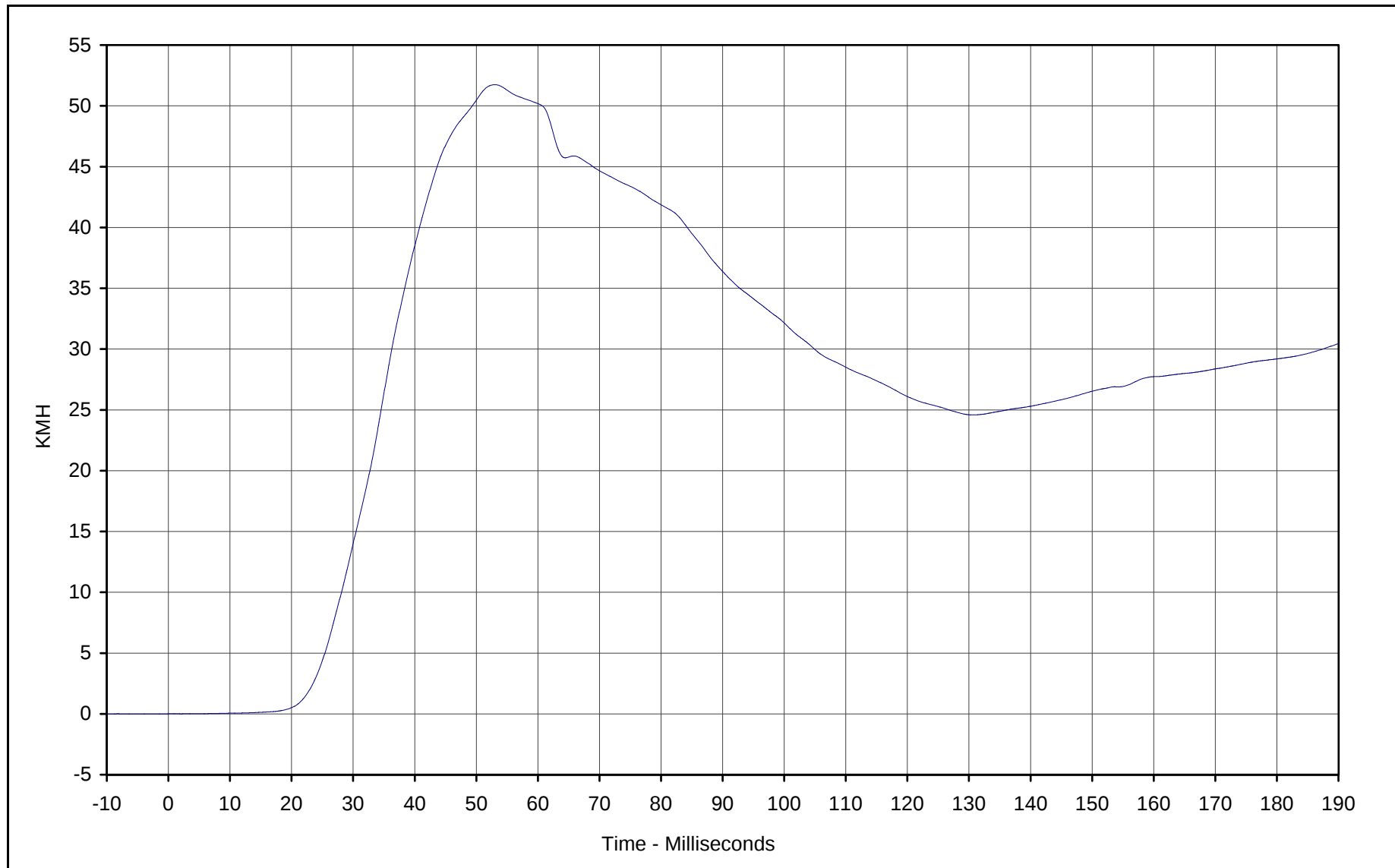




Curve Description: Driver Lower Spine Redundant Y
Maximum Value: 84.0 at 34.9 Milliseconds
Minimum Value: -53.0 at 62.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: FIL-010

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Driver Lower Spine Redundant Y Velocity

Maximum Value: 51.7 at 53.0 Milliseconds

Minimum Value: 0.0 at 2.1 Milliseconds

SAE Filter Class: 180

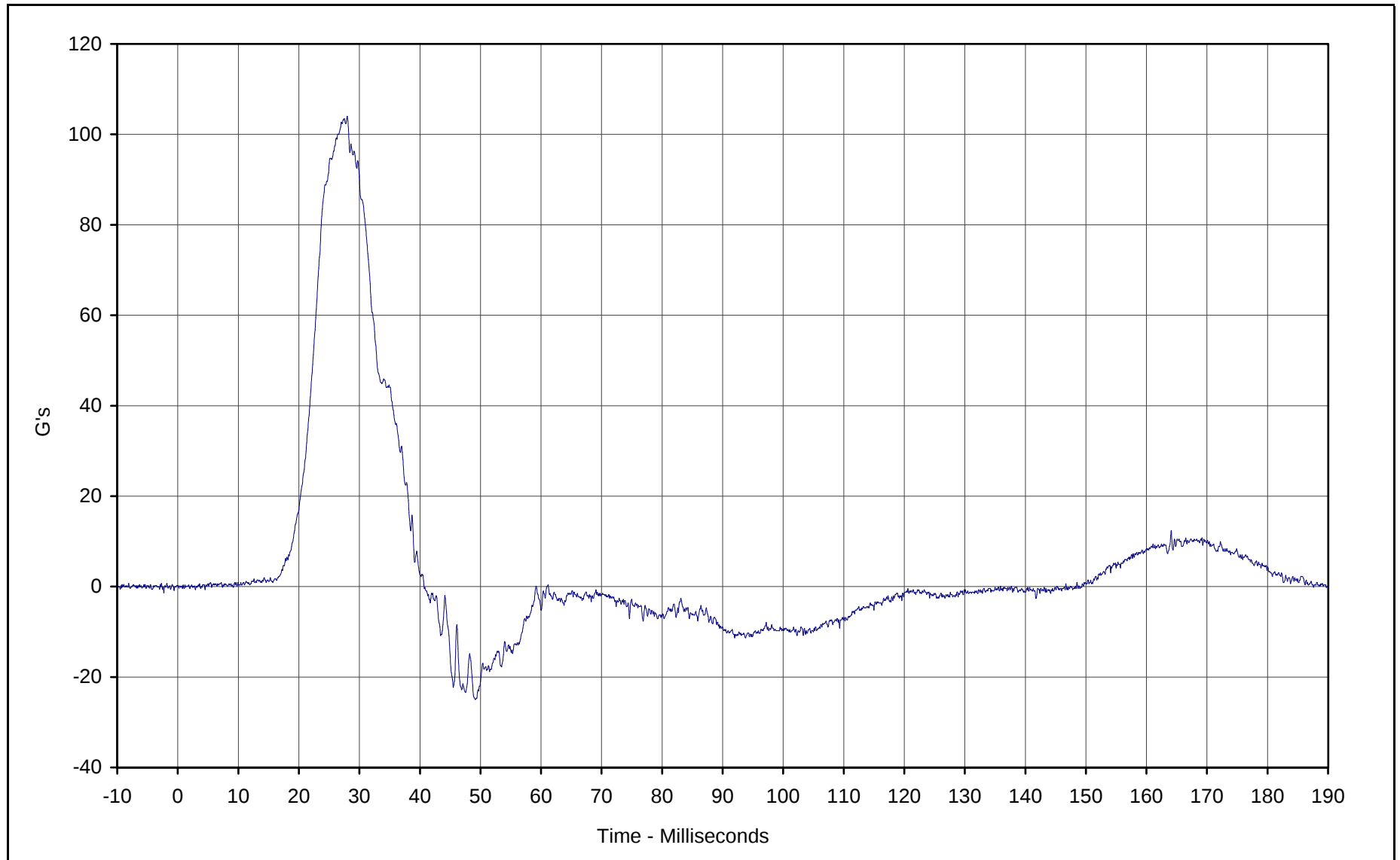
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Curve Number: IN1-0010

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

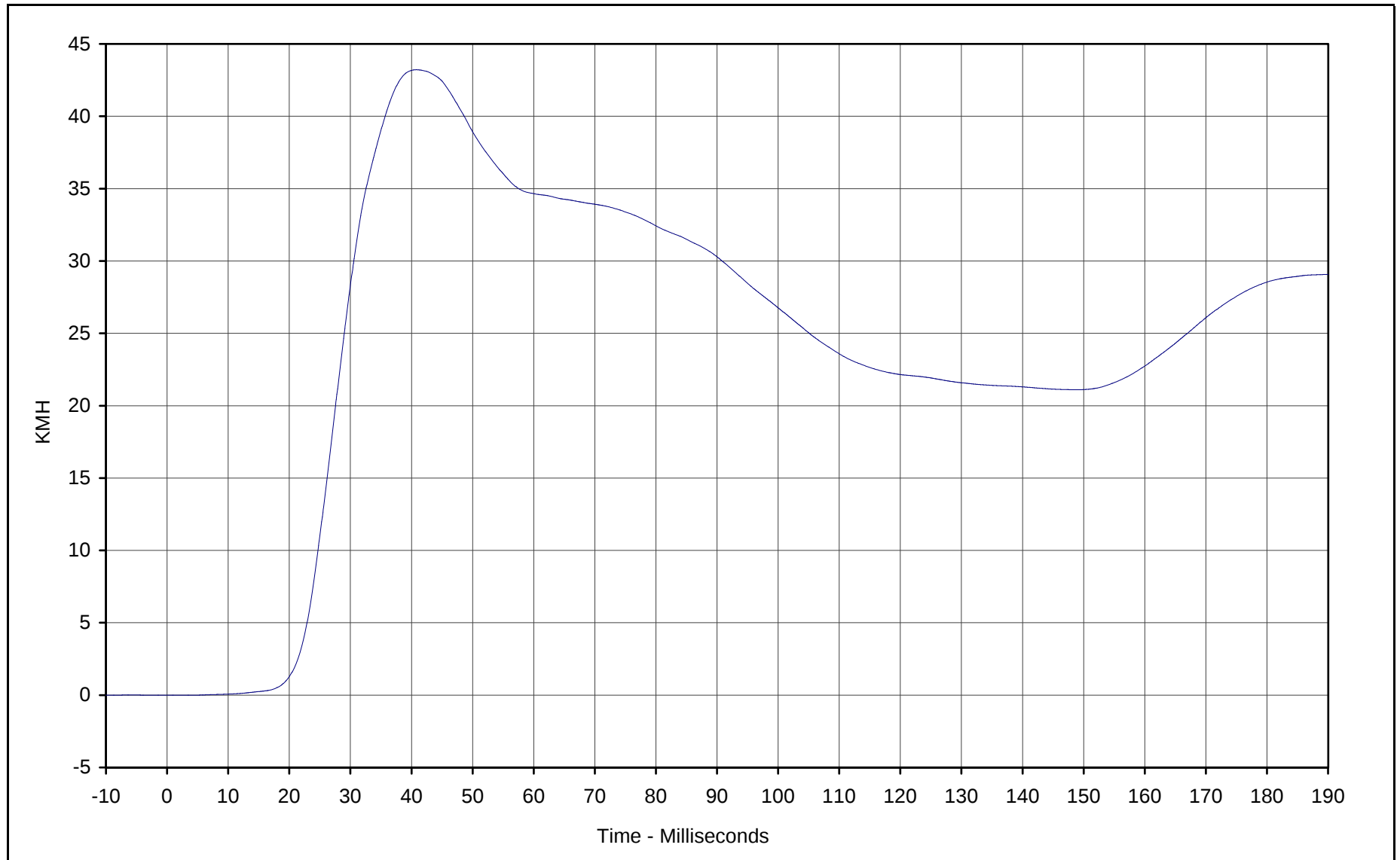




Curve Description: Driver Pelvis Redundant Y
Maximum Value: 104.0 at 28.0 Milliseconds
Minimum Value: -25.0 at 49.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-011

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

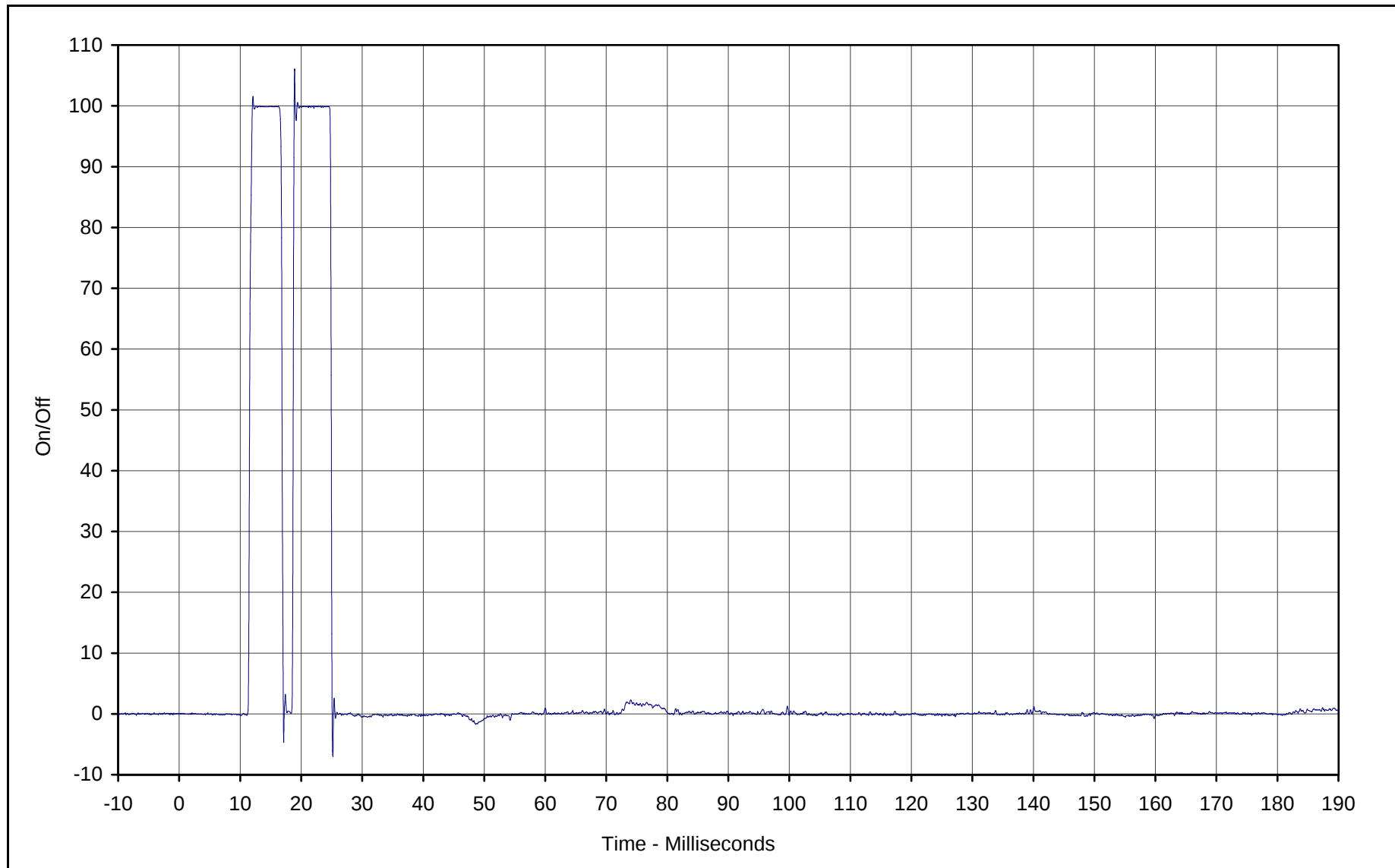




Curve Description: Driver Pelvis Redundant Y Velocity
Maximum Value: 43.2 at 40.8 Milliseconds
Minimum Value: 0.0 at 3.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-011

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

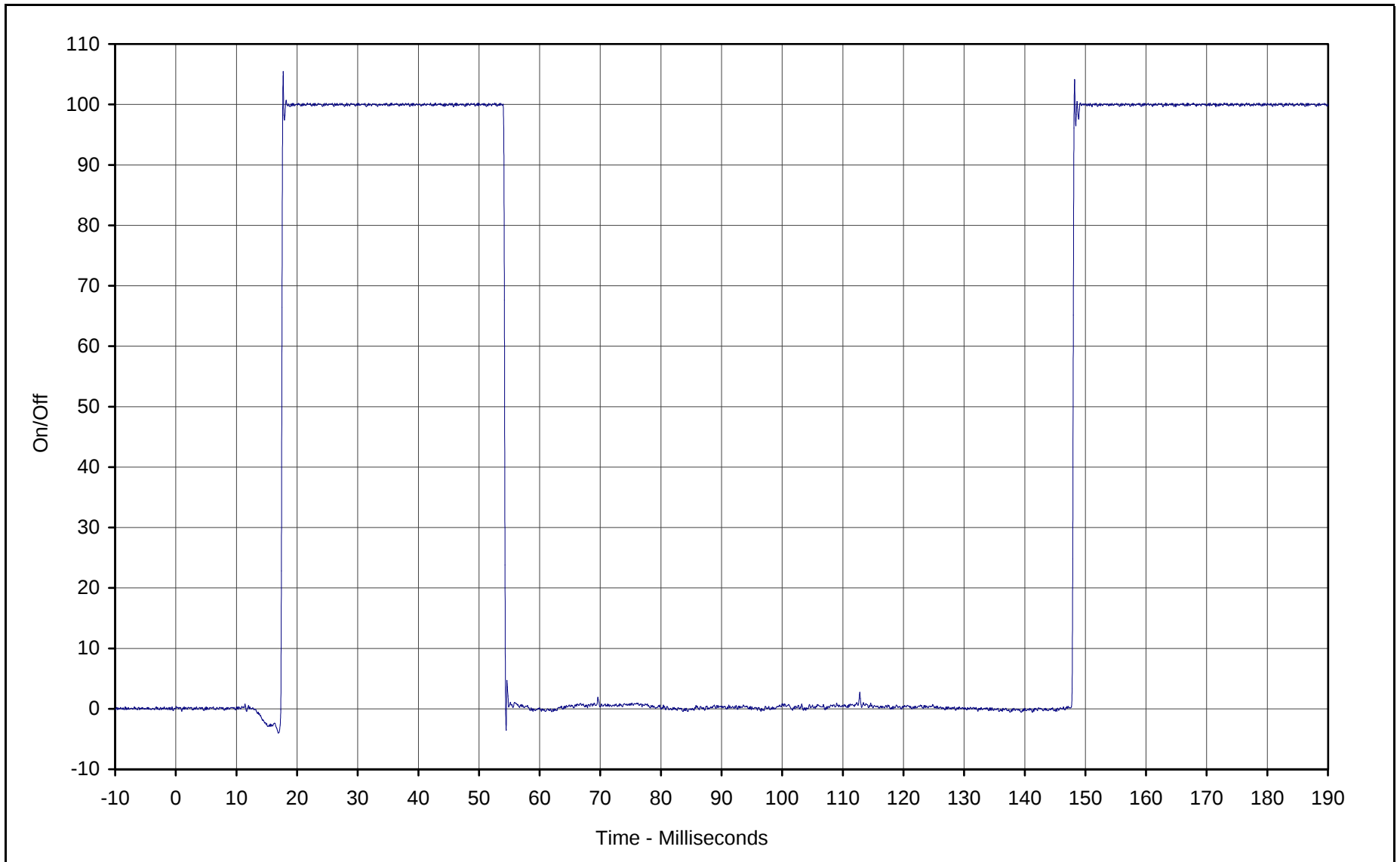




Curve Description: Driver Thorax Contact
Maximum Value: 105.8 at 18.9 Milliseconds
Crossing Point: 50% at 11.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-012

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

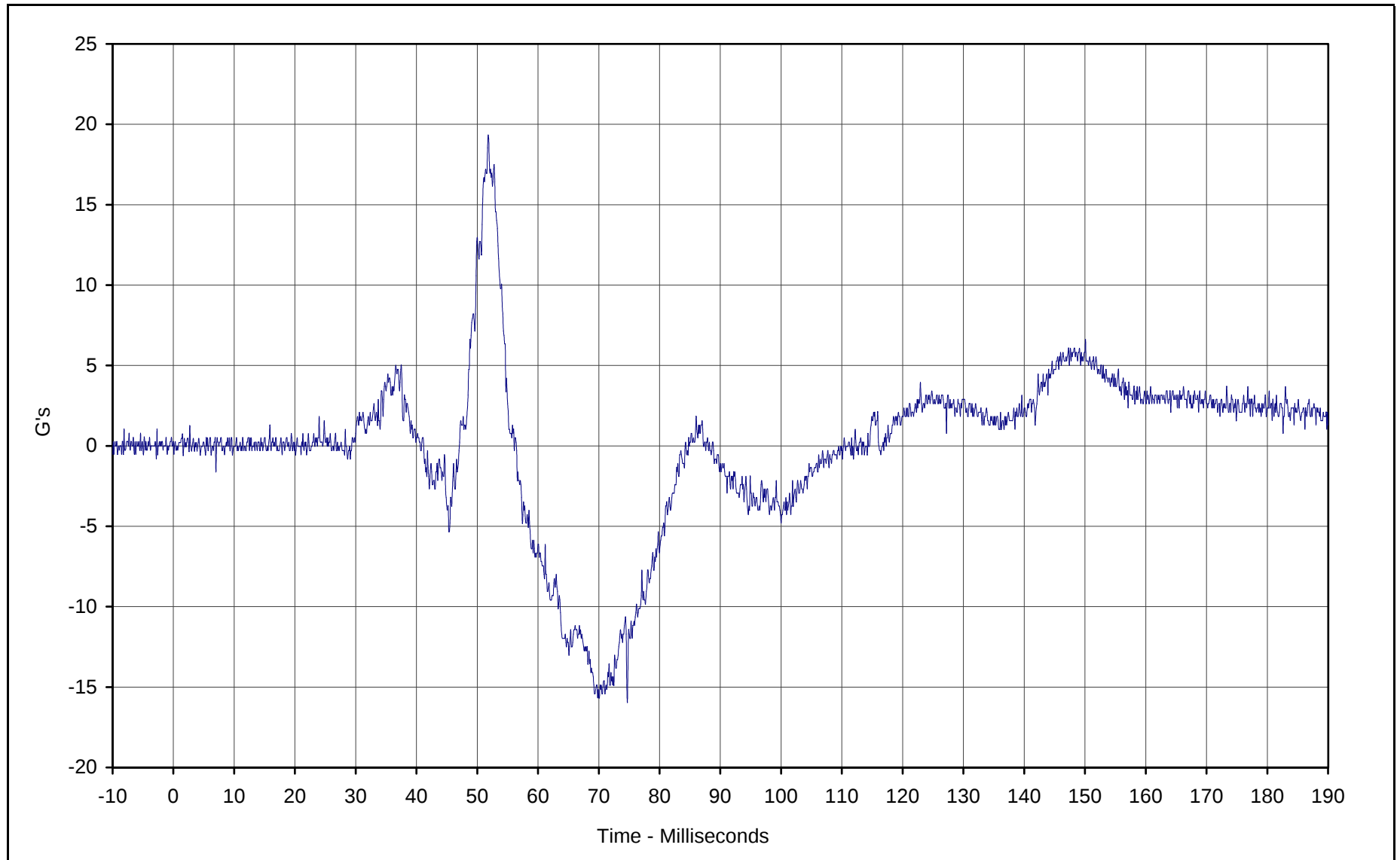




Curve Description: Driver Pelvis Contact
Maximum Value: 105.5 at 17.7 Milliseconds
Crossing Point: 50% at 17.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-013

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

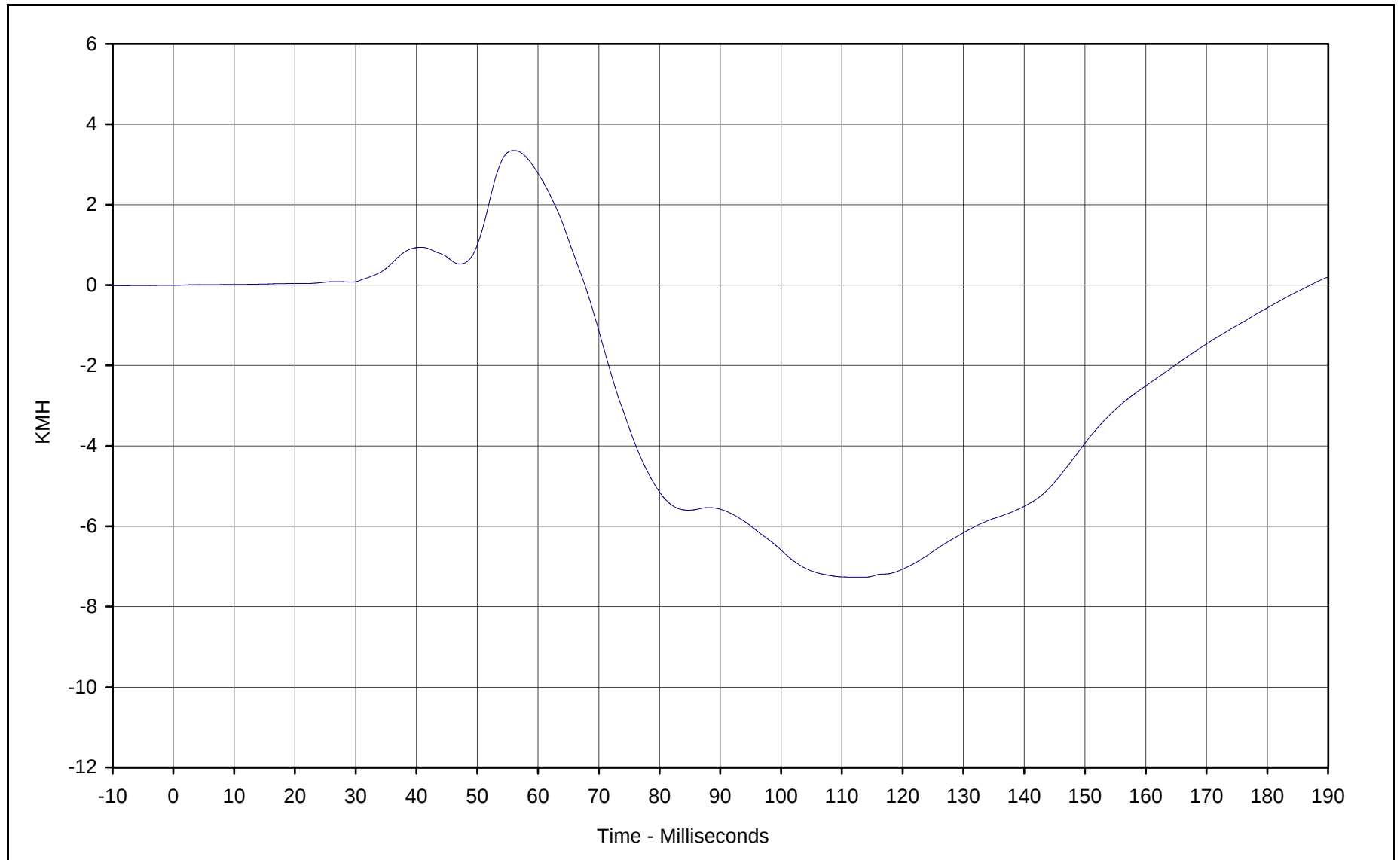




Curve Description: Pass. Head CG X
Maximum Value: 19.3 at 51.8 Milliseconds
Minimum Value: -15.9 at 74.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-014

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

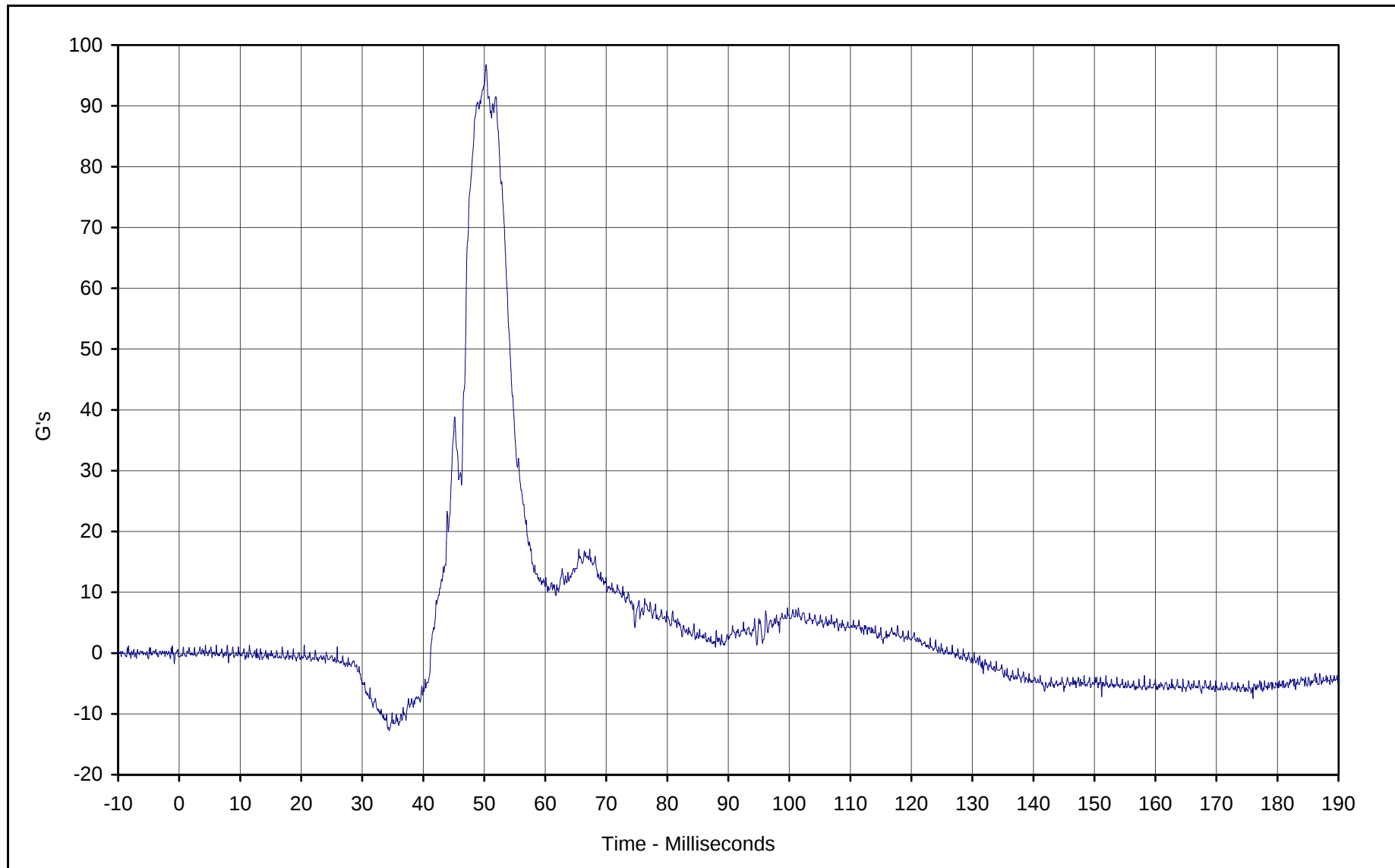




Curve Description: Pass. Head CG X Velocity
Maximum Value: 3.3 at 56.1 Milliseconds
Minimum Value: -7.3 at 113.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-014

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

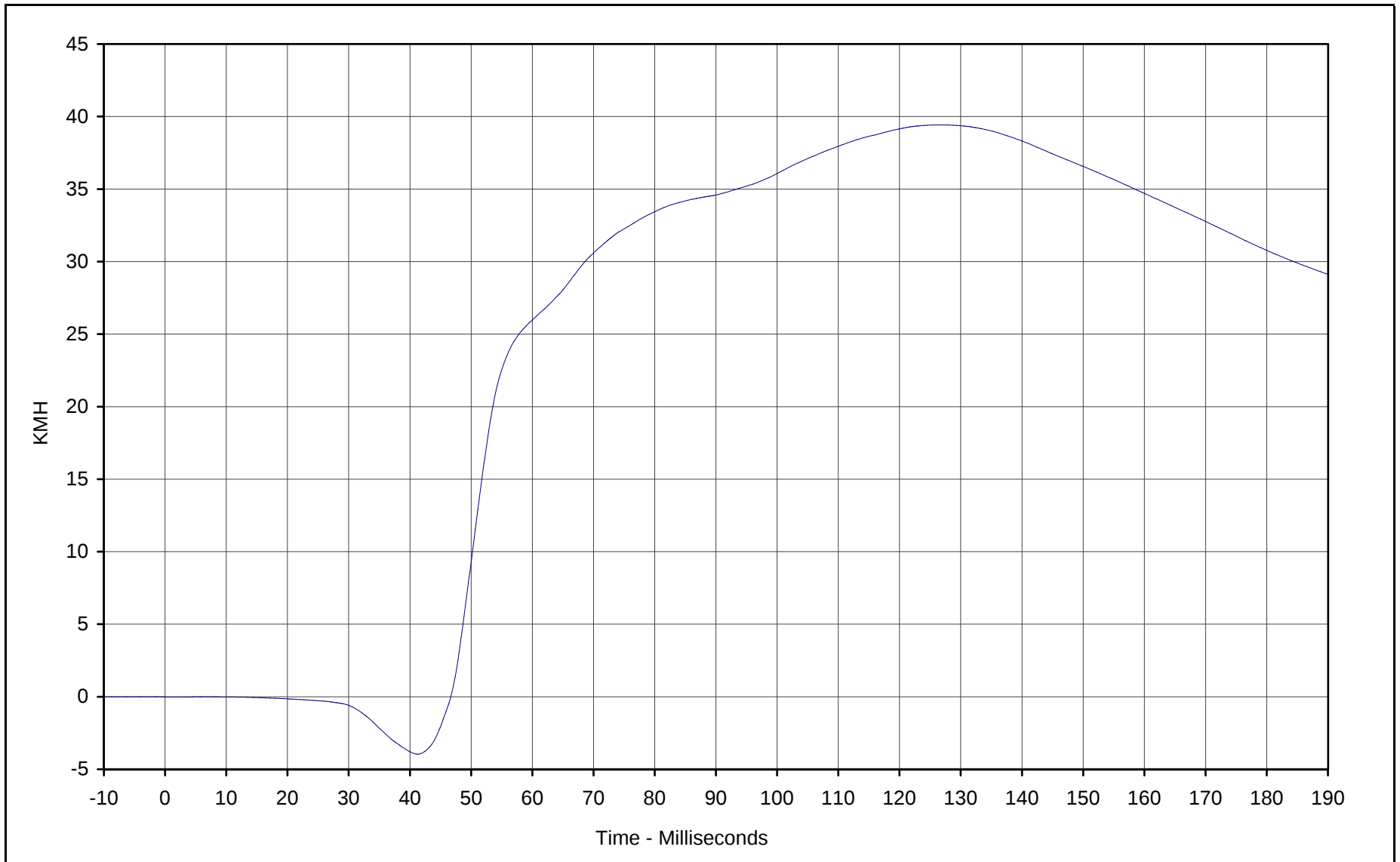




Curve Description: Pass. Head CG Y
Maximum Value: 96.8 at 50.3 Milliseconds
Minimum Value: -12.8 at 34.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-015

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

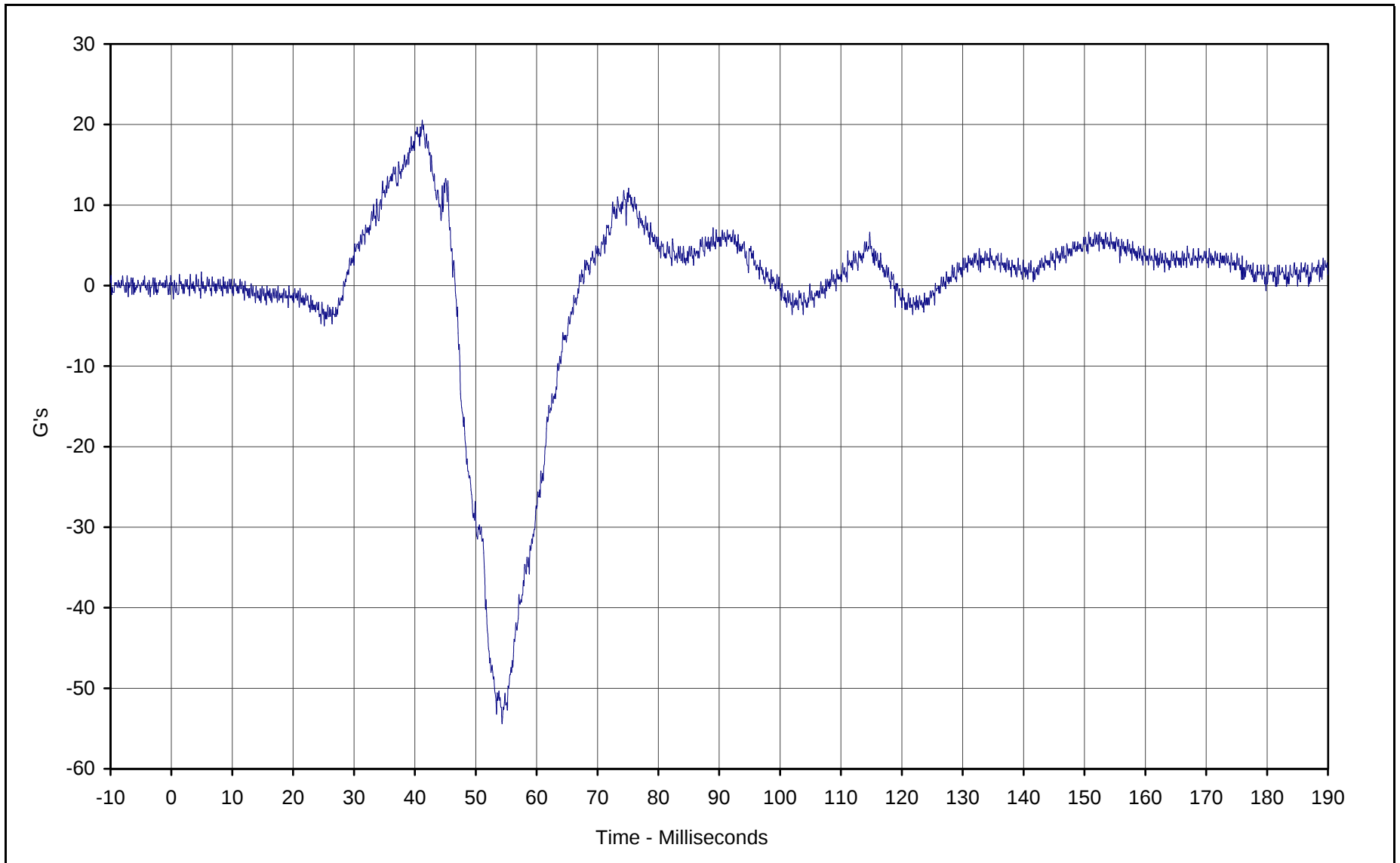




Curve Description: Pass. Head CG Y Velocity
Maximum Value: 39.4 at 126.9 Milliseconds
Minimum Value: -4.0 at 41.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-015

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

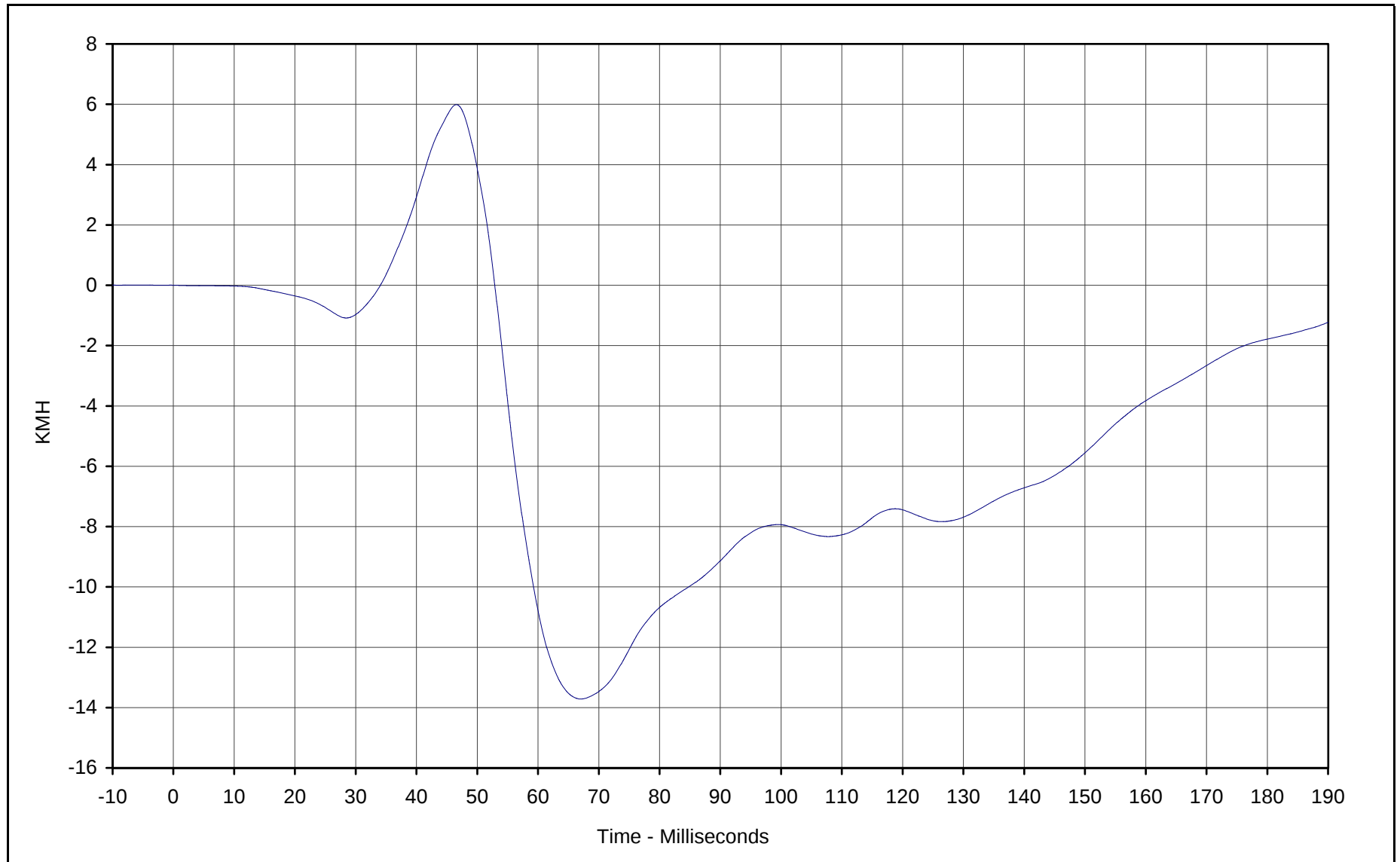




Curve Description: Pass. Head CG Z
Maximum Value: 20.5 at 41.2 Milliseconds
Minimum Value: -54.4 at 54.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-016

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

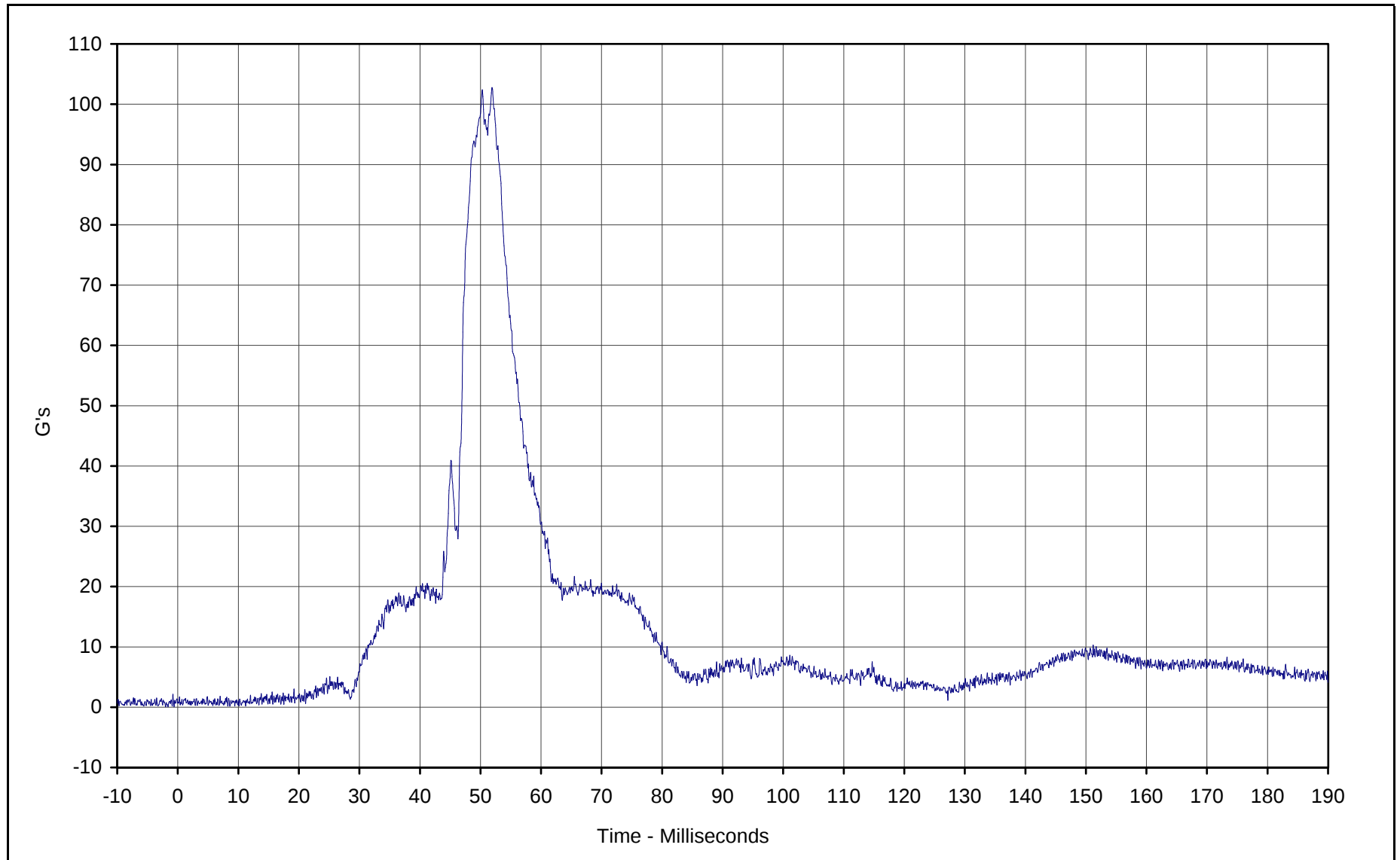




Curve Description: Pass. Head CG Z Velocity
Maximum Value: 6.0 at 46.6 Milliseconds
Minimum Value: -13.7 at 67.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-016

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

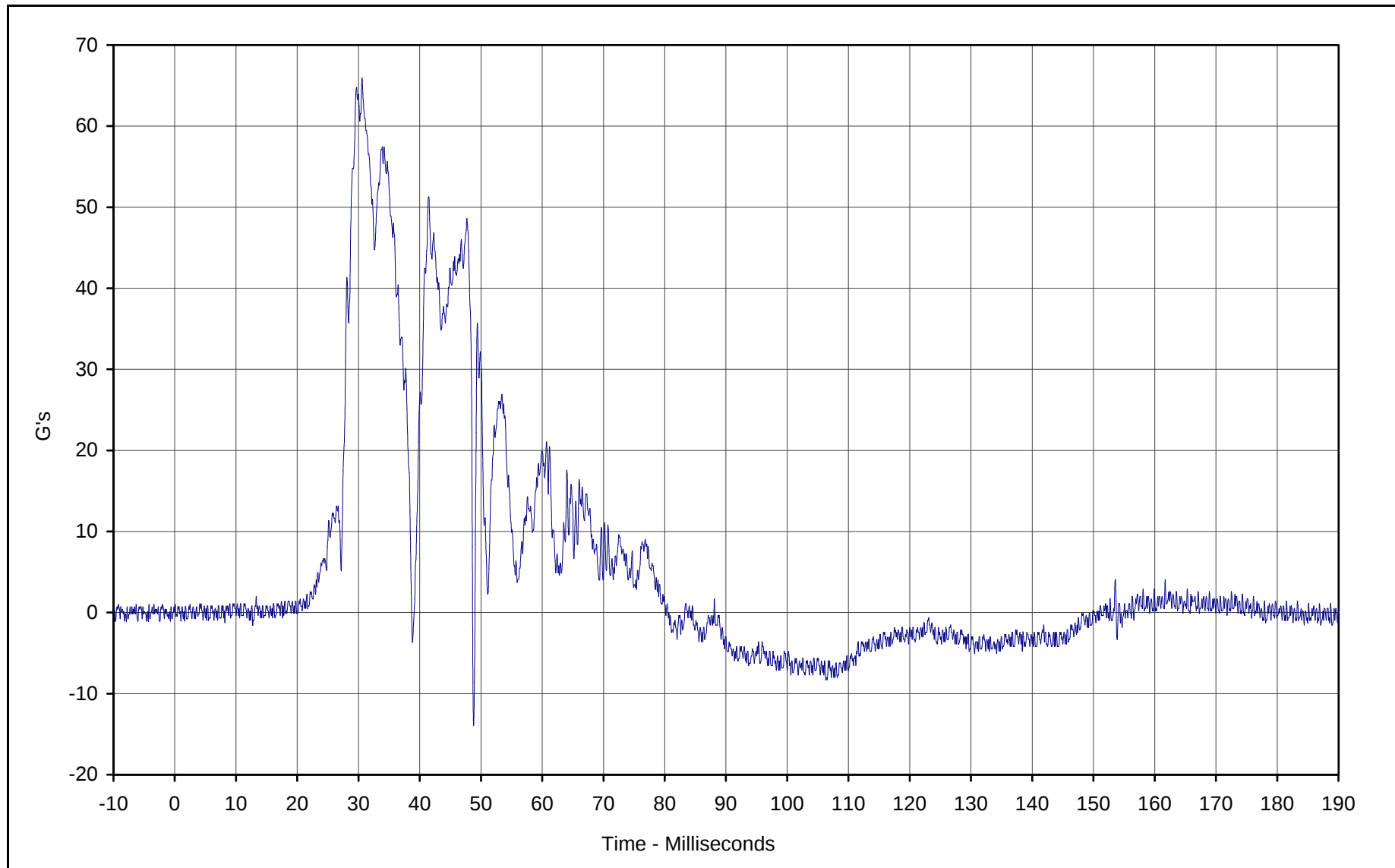




Curve Description: Pass. Head CG Resultant
Maximum Value: 102.8 at 51.9 Milliseconds
Minimum Value: 0.2 at 8.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: RES-014

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

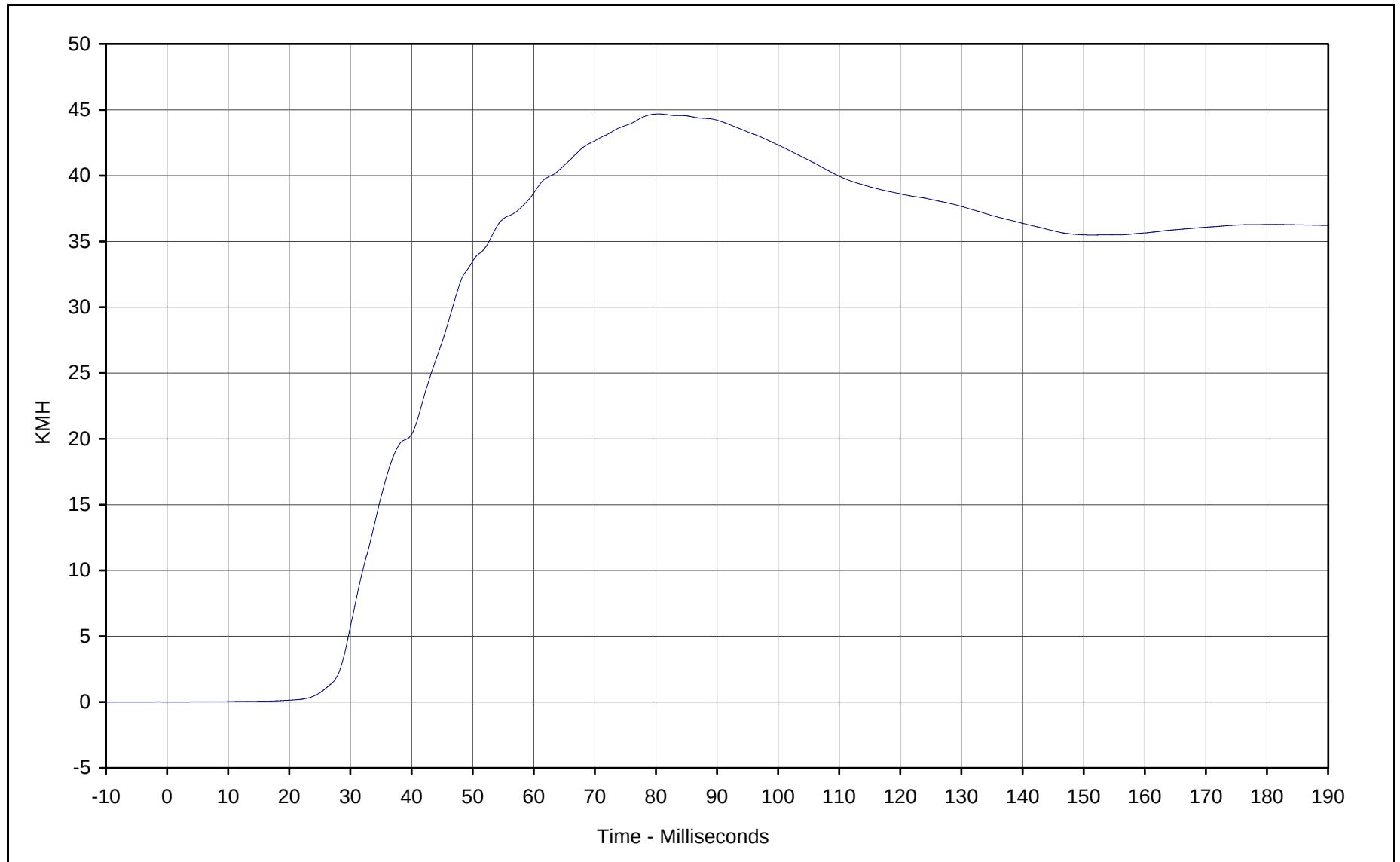




Curve Description: Pass. Upper Rib Primary Y
Maximum Value: 65.9 at 30.6 Milliseconds
Minimum Value: -13.9 at 48.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-017

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Pass. Upper Rib Primary Y Velocity

Maximum Value: 44.7 at 80.4 Milliseconds

Minimum Value: 0.0 at 2.4 Milliseconds

SAE Filter Class: 180

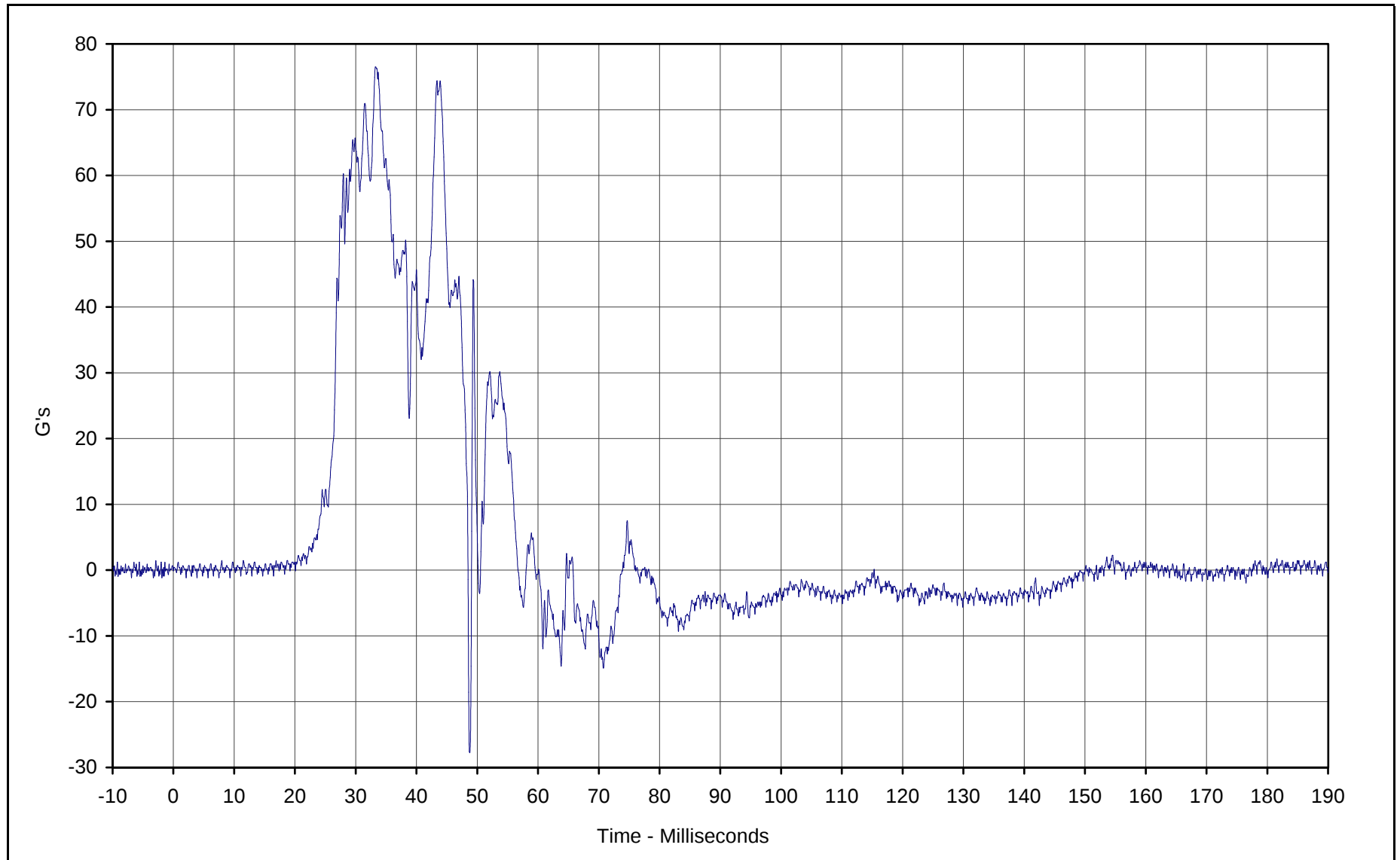
Date of Test: 11/19/01

Curve Number: IN1-017

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

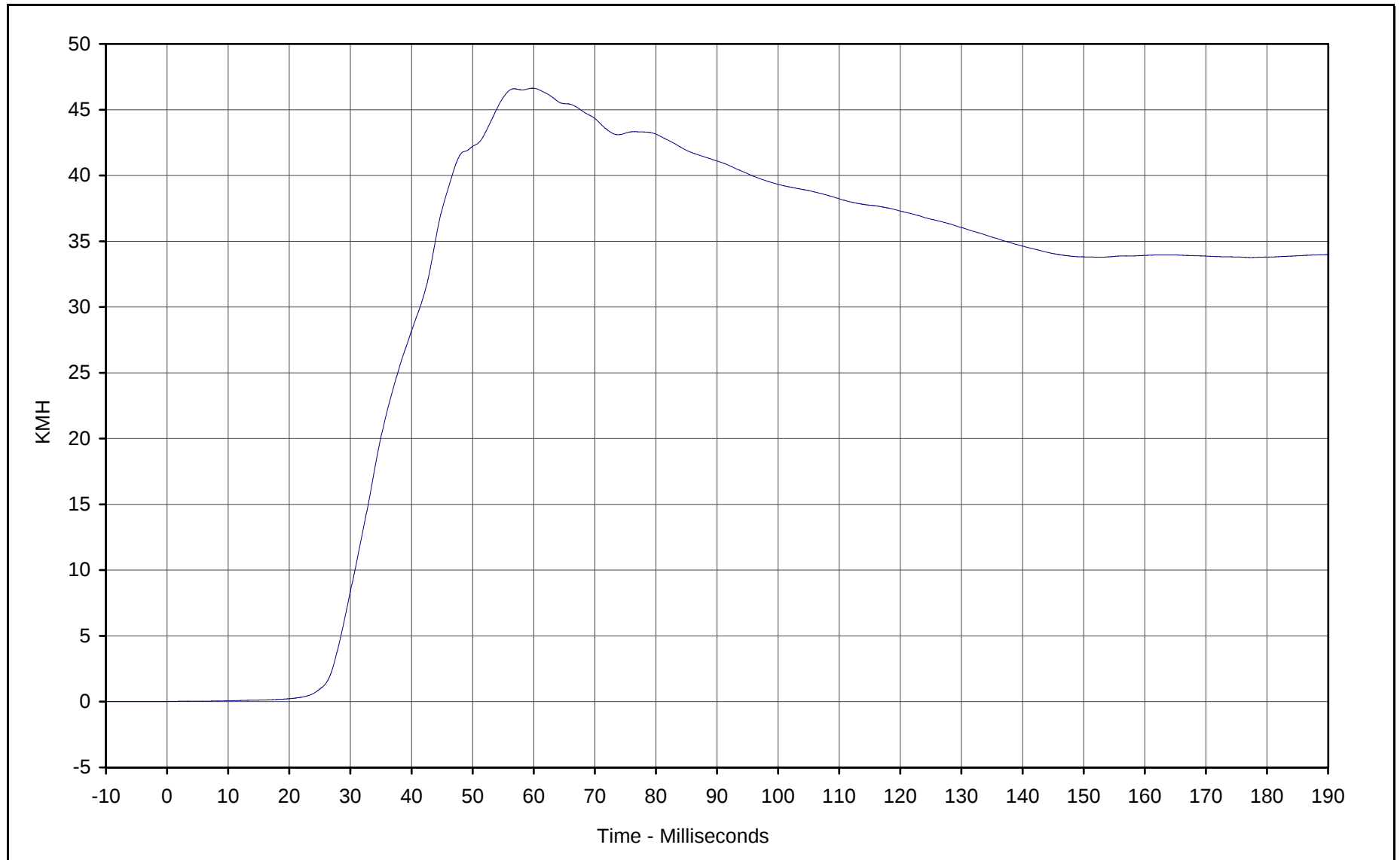




Curve Description: Pass. Lower Rib Primary Y
Maximum Value: 76.5 at 33.2 Milliseconds
Minimum Value: -27.8 at 48.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-018

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Pass. Lower Rib Primary Y Velocity

Maximum Value: 46.6 at 59.8 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

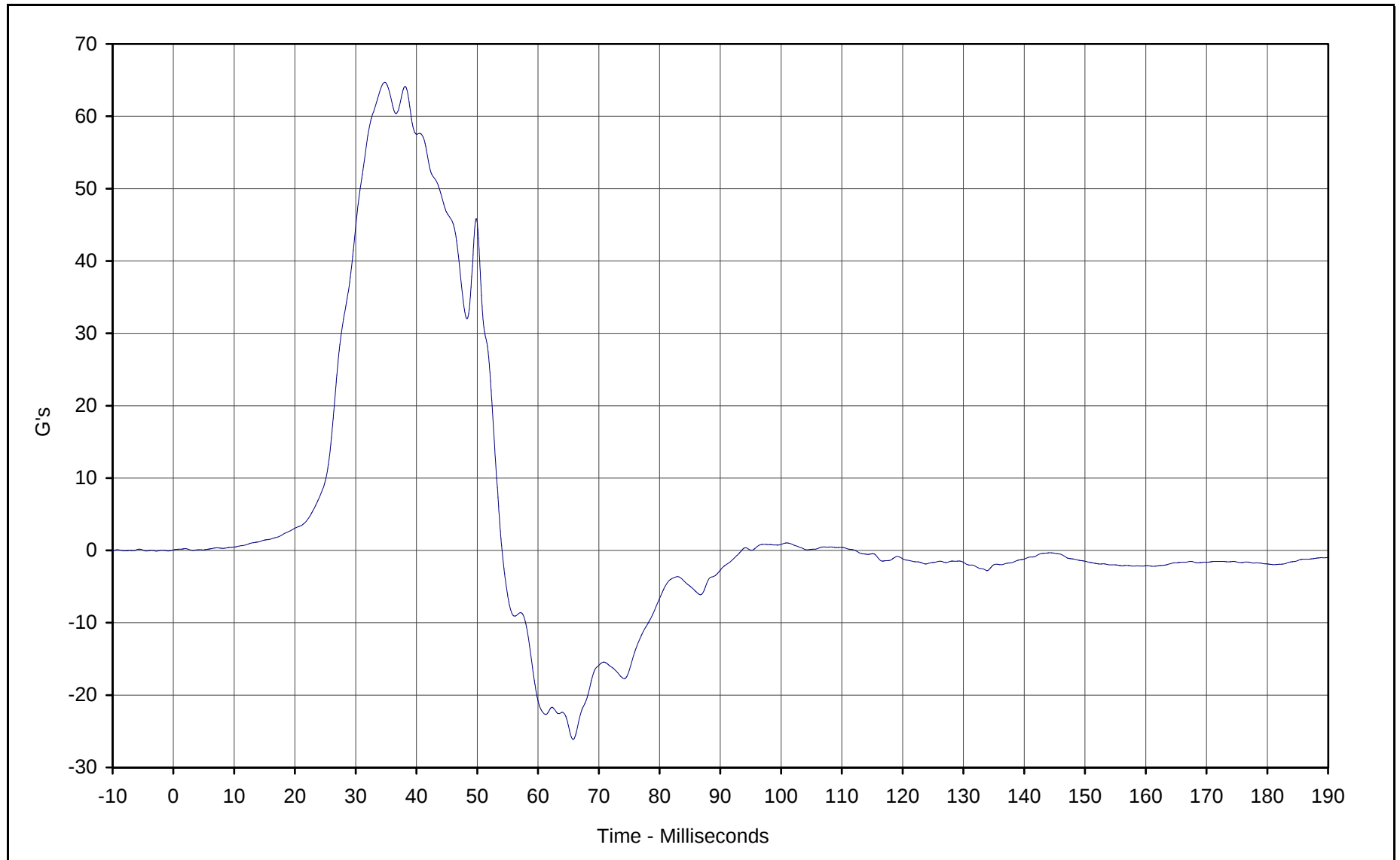
Date of Test: 11/19/01

Curve Number: IN1-018

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

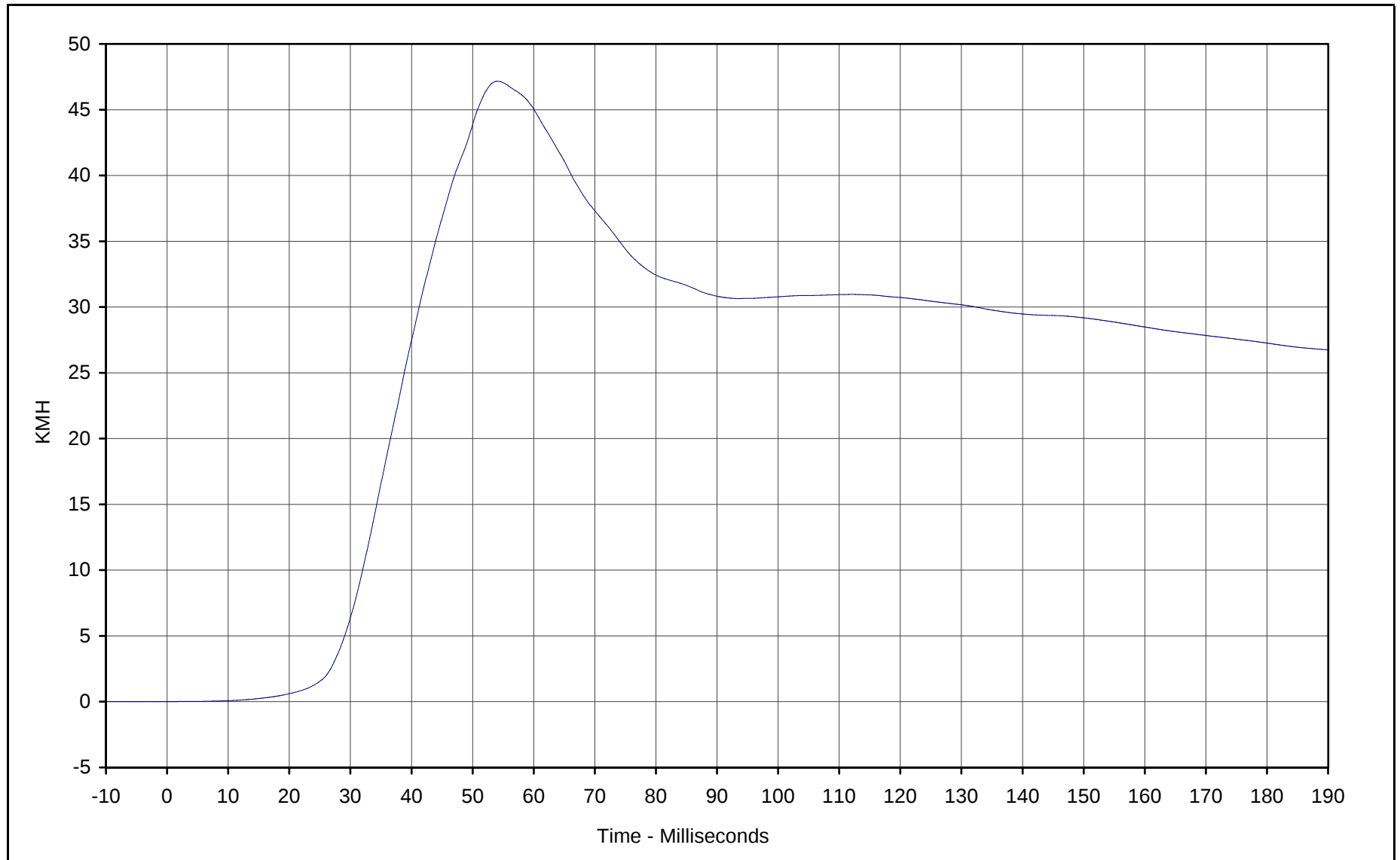




Curve Description: Pass. Lower Spine Primary Y
Maximum Value: 64.7 at 34.8 Milliseconds
Minimum Value: -26.1 at 65.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: FIL-019

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Pass. Lower Spine Primary Y Velocity

Maximum Value: 47.2 at 54.1 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

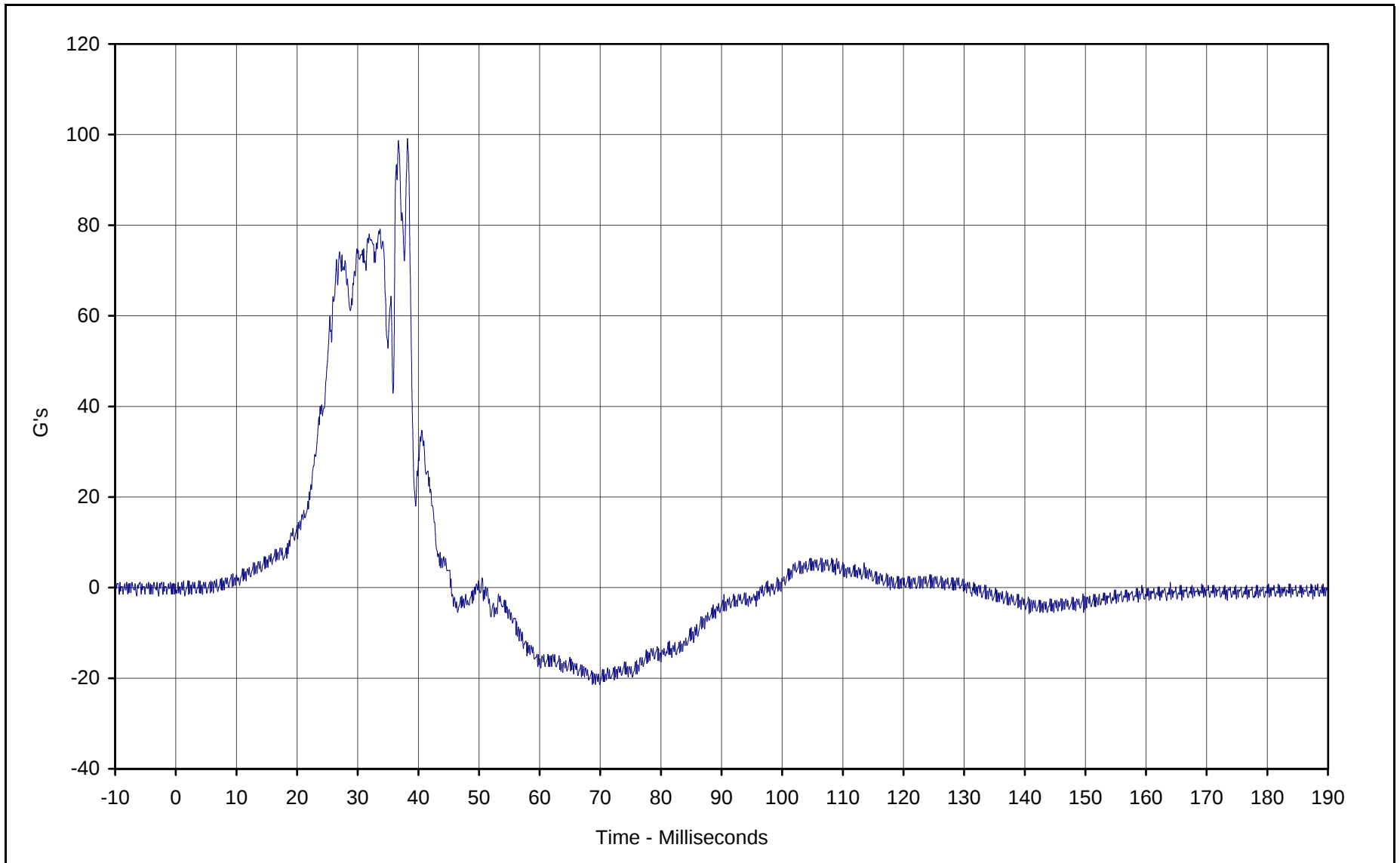
Date of Test: 11/19/01

Curve Number: IN1-019

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

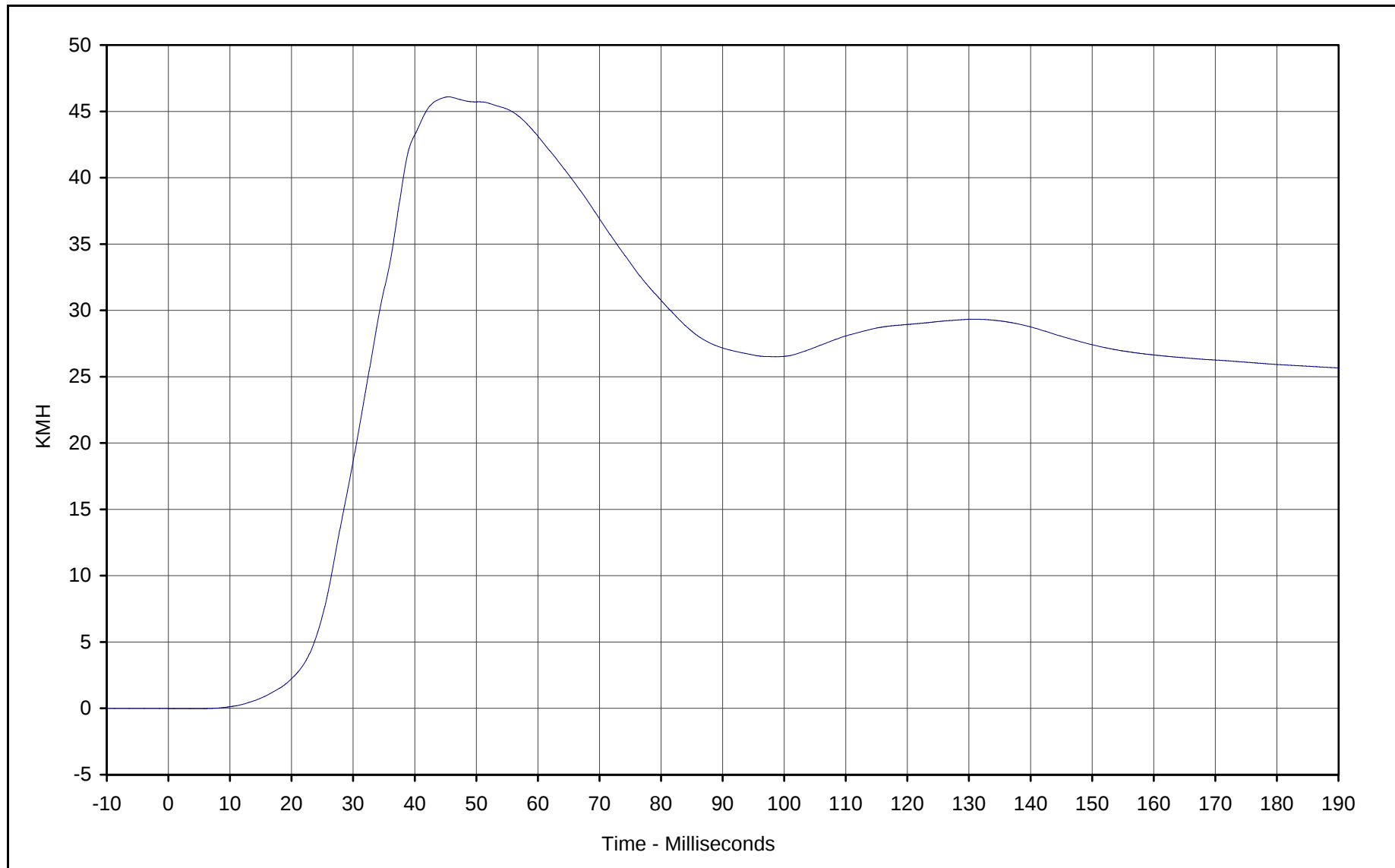




Curve Description: Pass. Pelvis Primary Y
Maximum Value: 99.0 at 38.2 Milliseconds
Minimum Value: -21.4 at 68.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-020

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

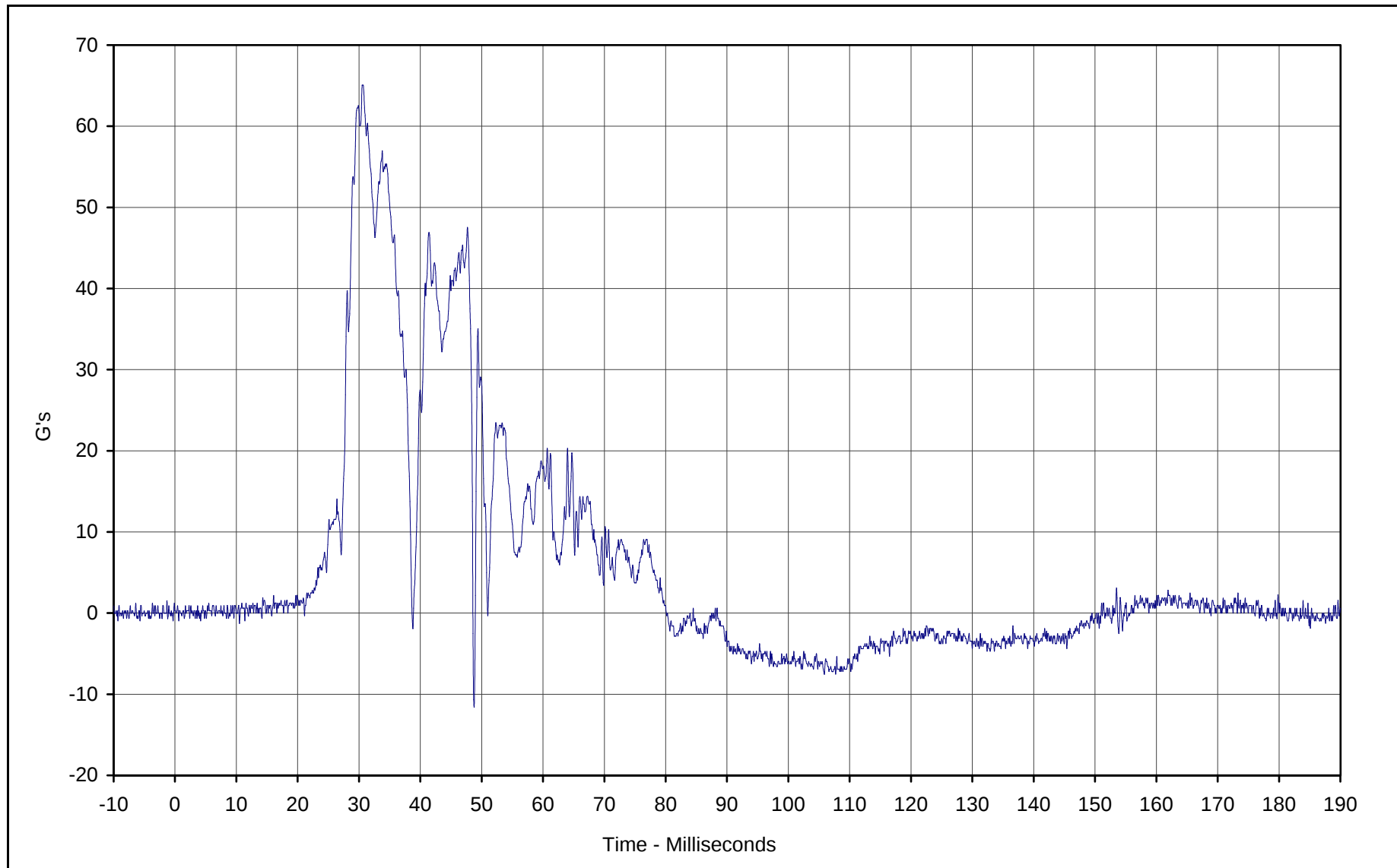




Curve Description: Pass. Pelvis Primary Y Velocity
Maximum Value: 46.1 at 45.5 Milliseconds
Minimum Value: 0.0 at 2.2 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-020

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

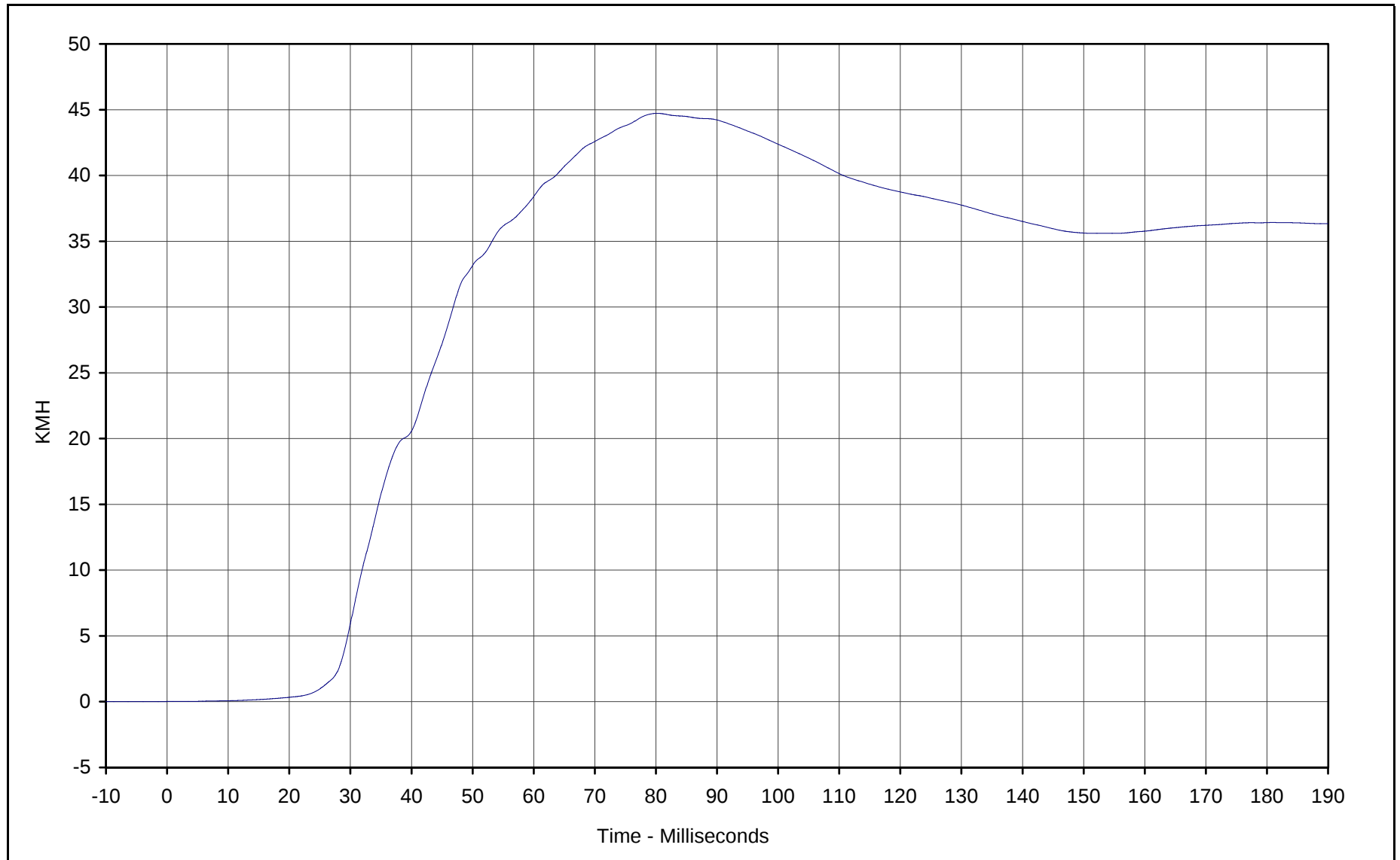




Curve Description: Pass. Upper Rib Redundant Y
Maximum Value: 65.1 at 30.5 Milliseconds
Minimum Value: -11.6 at 48.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-021

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Pass. Upper Rib Redundant Y Velocity

Maximum Value: 44.7 at 80.2 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

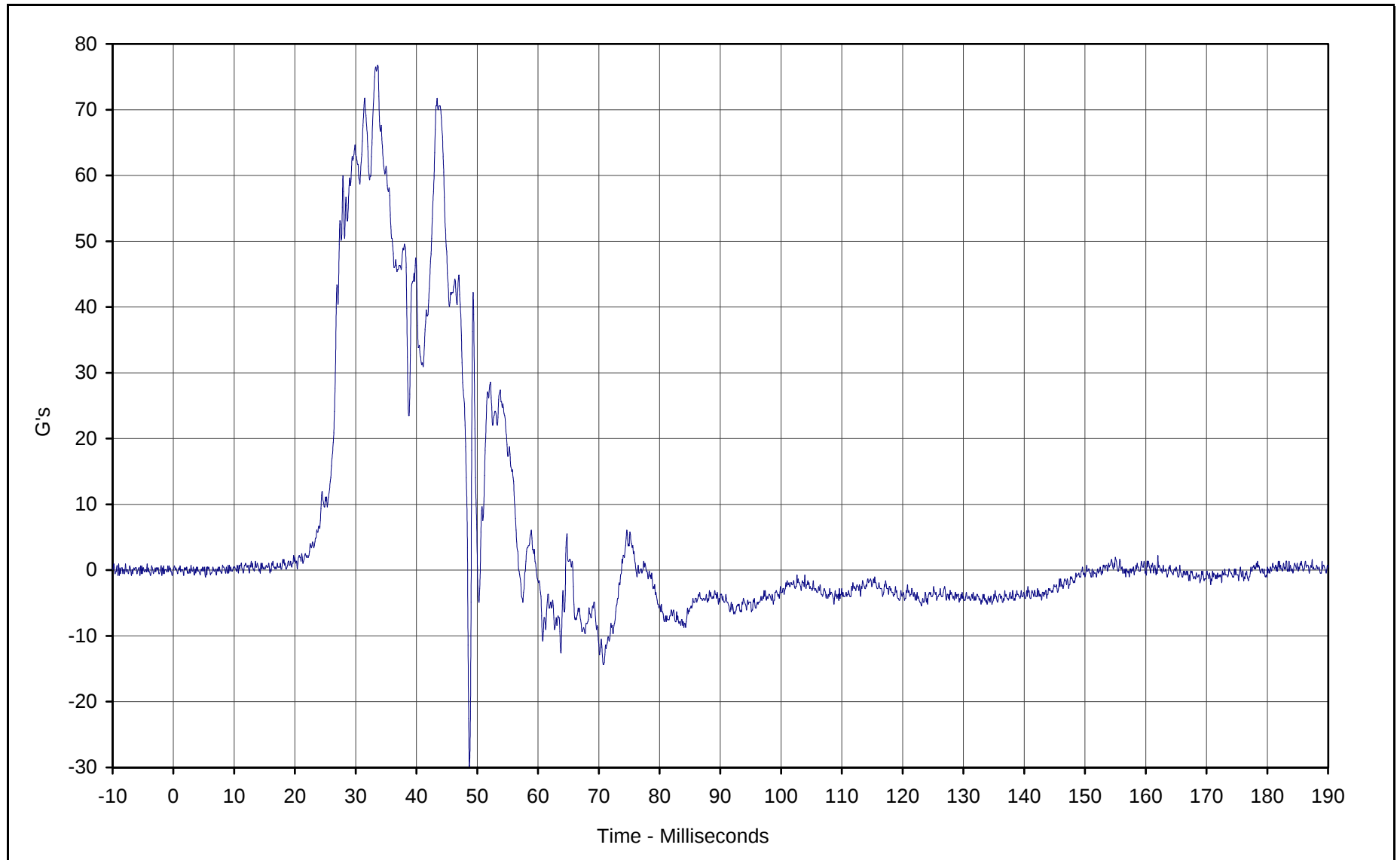
Date of Test: 11/19/01

Curve Number: IN1-021

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

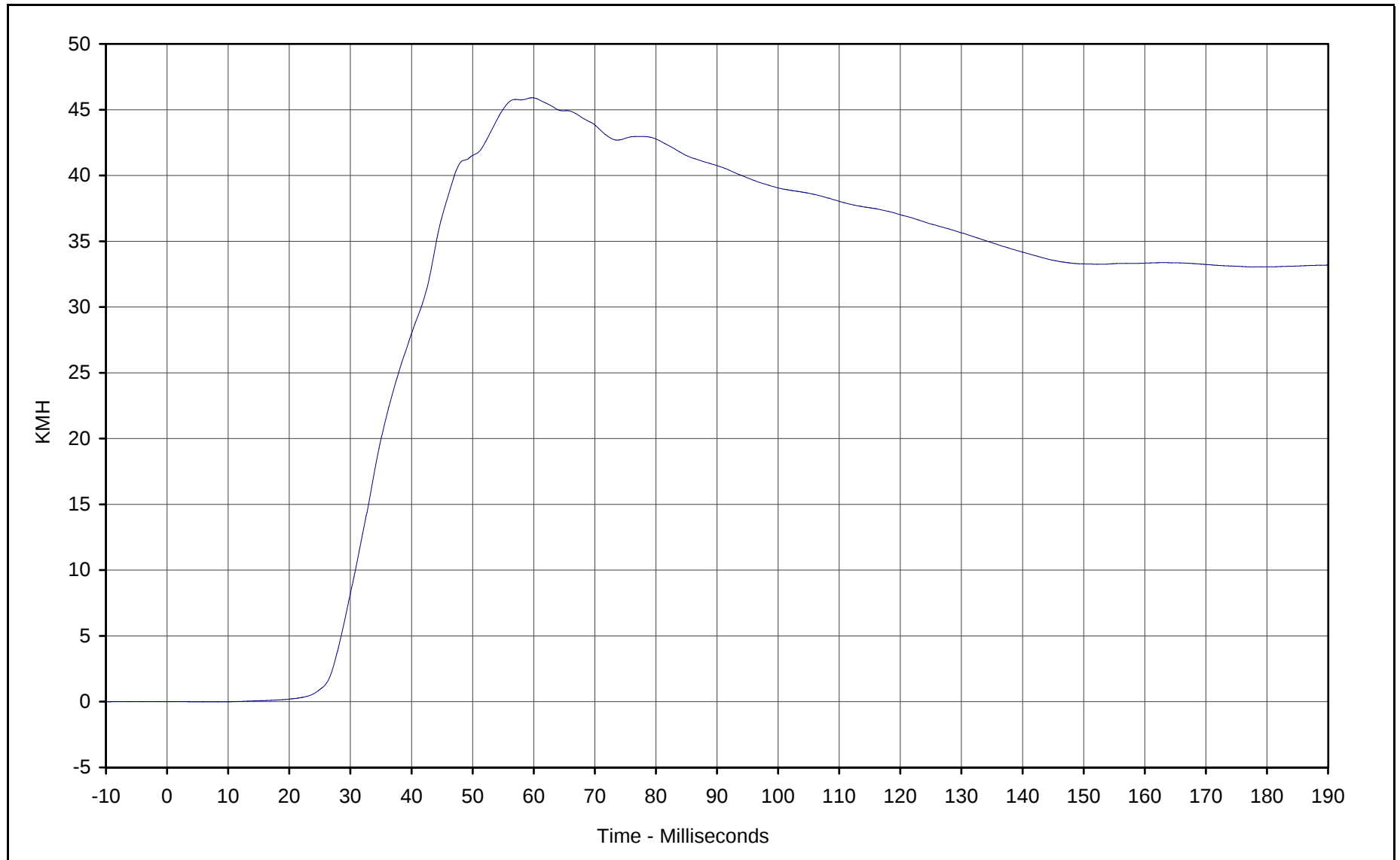




Curve Description: Pass. Lower Rib Redundant Y
Maximum Value: 76.8 at 33.6 Milliseconds
Minimum Value: -29.7 at 48.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-022

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Pass. Lower Rib Redundant Y Velocity

Maximum Value: 45.9 at 59.8 Milliseconds

Minimum Value: 0.0 at 7.6 Milliseconds

SAE Filter Class: 180

Date of Test: 11/19/01

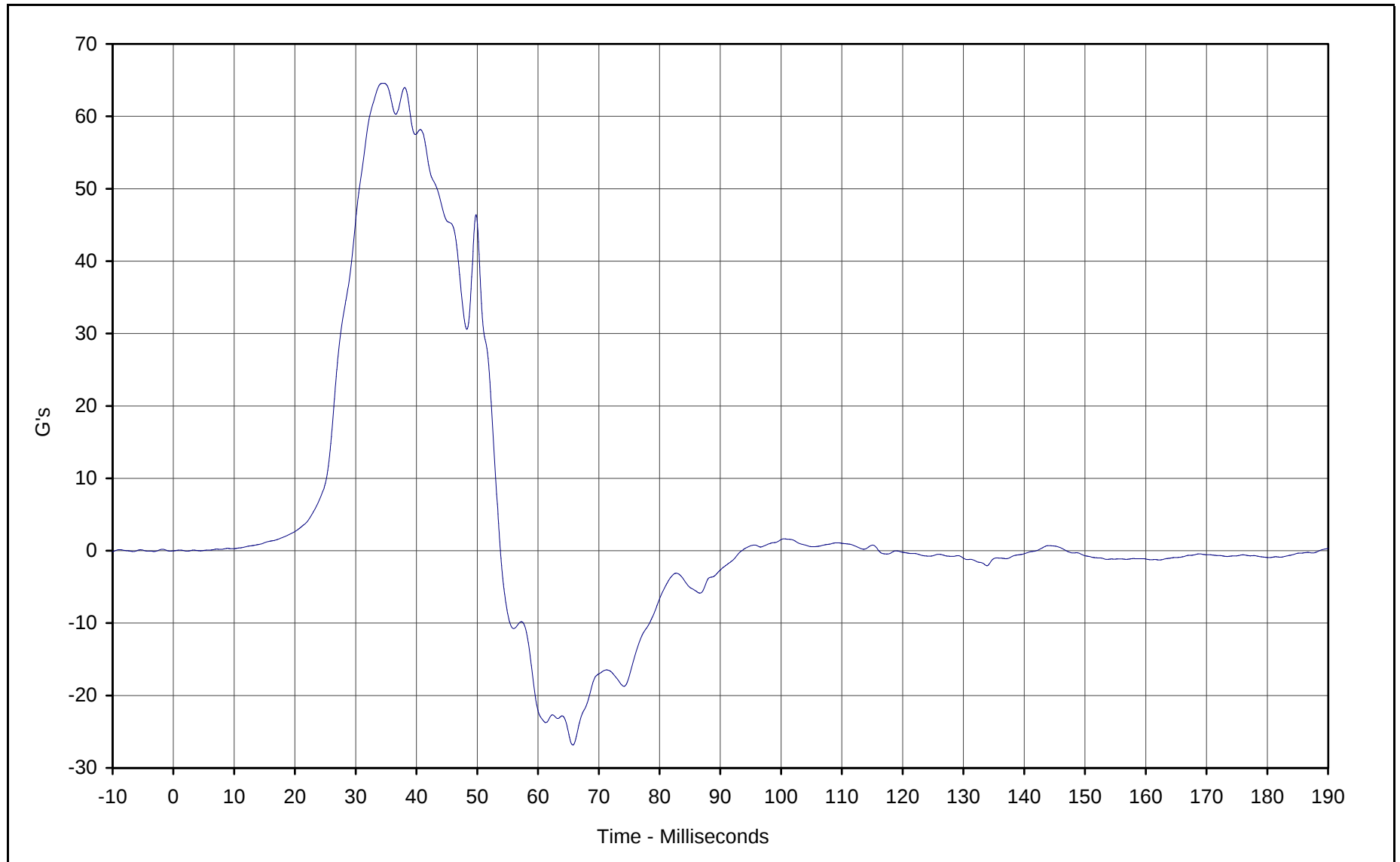
Curve Number: IN1-022

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



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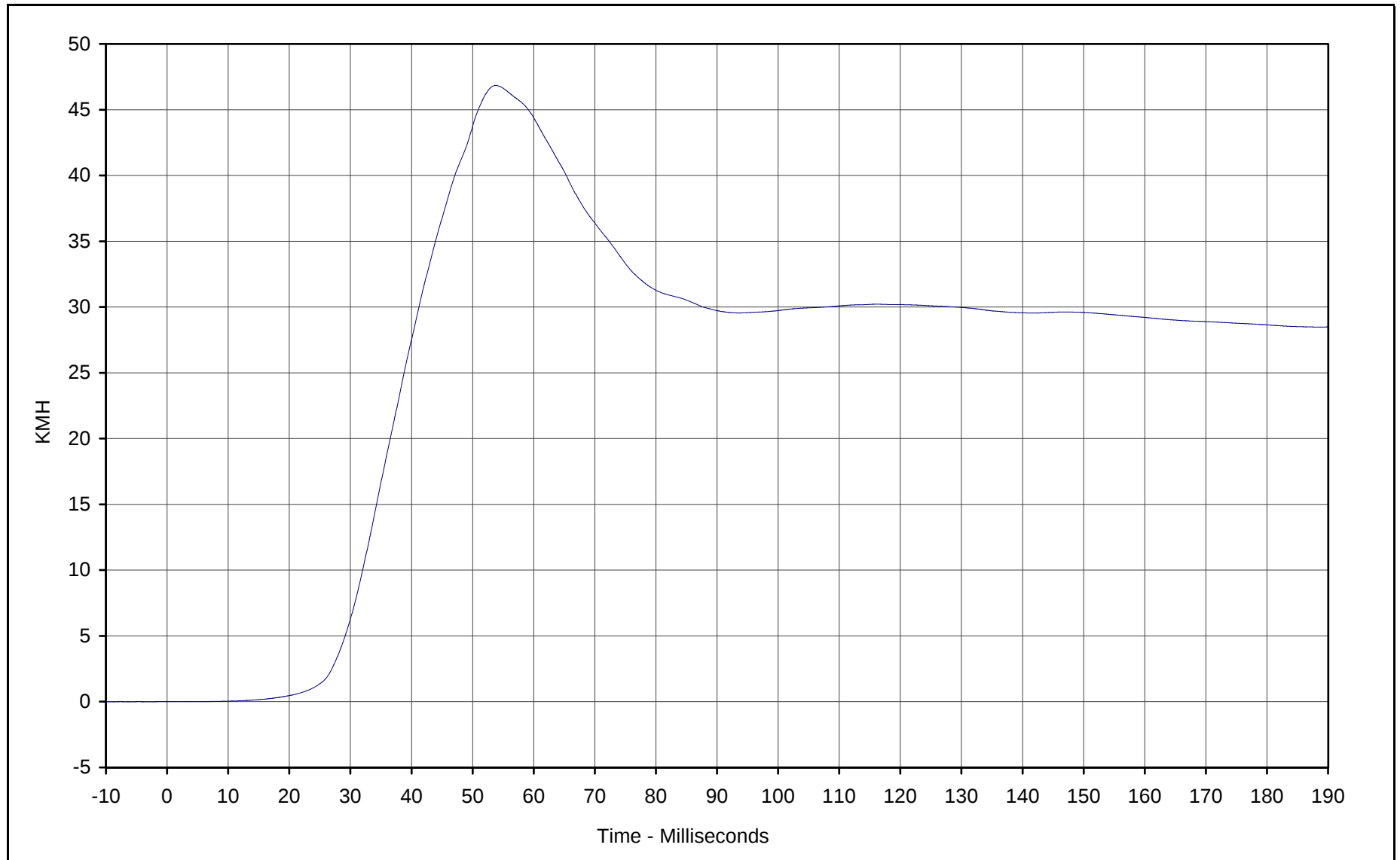


Curve Description: Pass. Lower Spine Redundant Y
Maximum Value: 64.6 at 34.6 Milliseconds
Minimum Value: -26.8 at 65.7 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: FIL-023

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



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Curve Description: Pass. Lower Spine Redundant Y Velocity

Maximum Value: 46.8 at 53.8 Milliseconds

Minimum Value: 0.0 at 0.2 Milliseconds

SAE Filter Class: 180

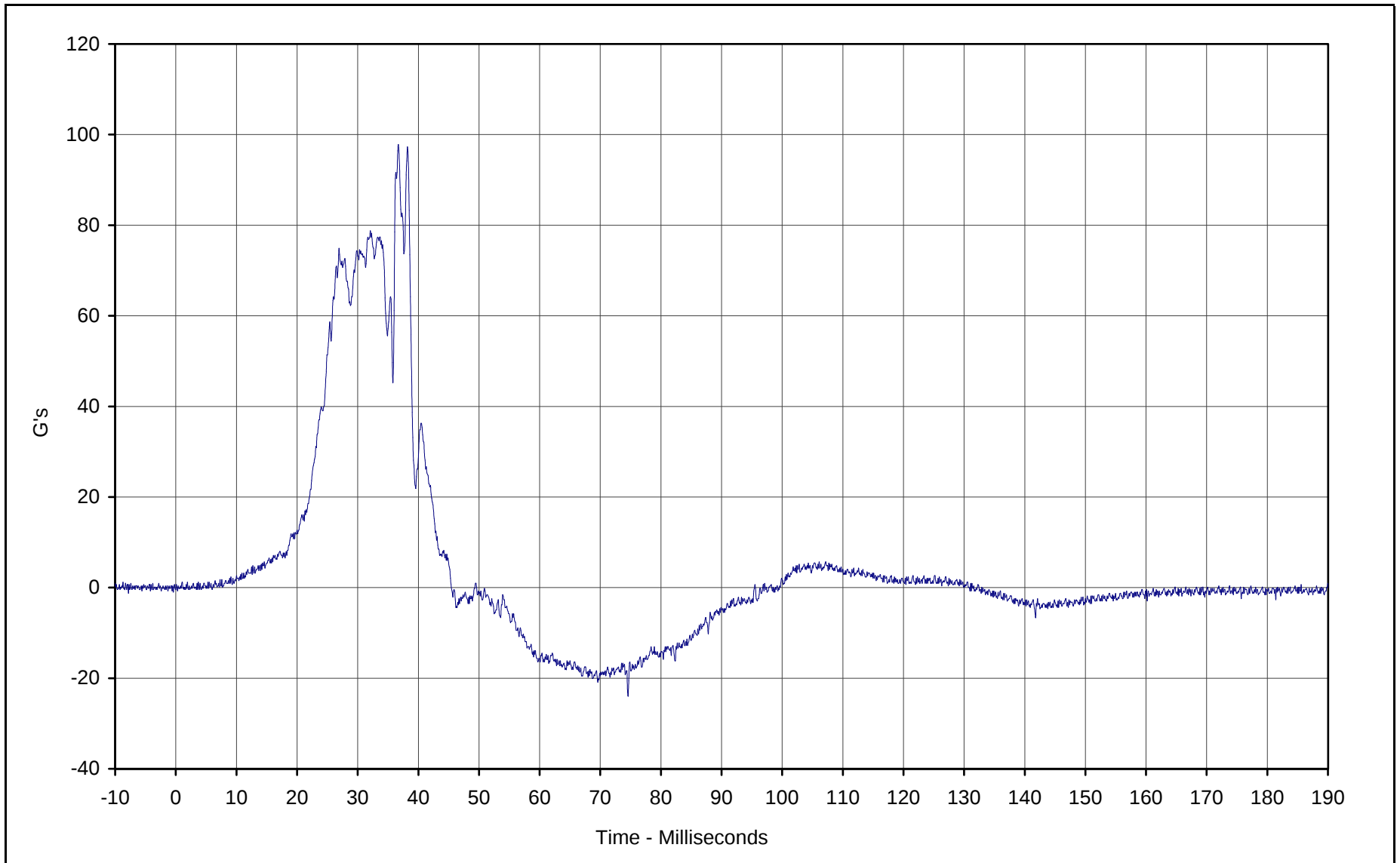
Date of Test: 11/19/01

Curve Number: IN1-023

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

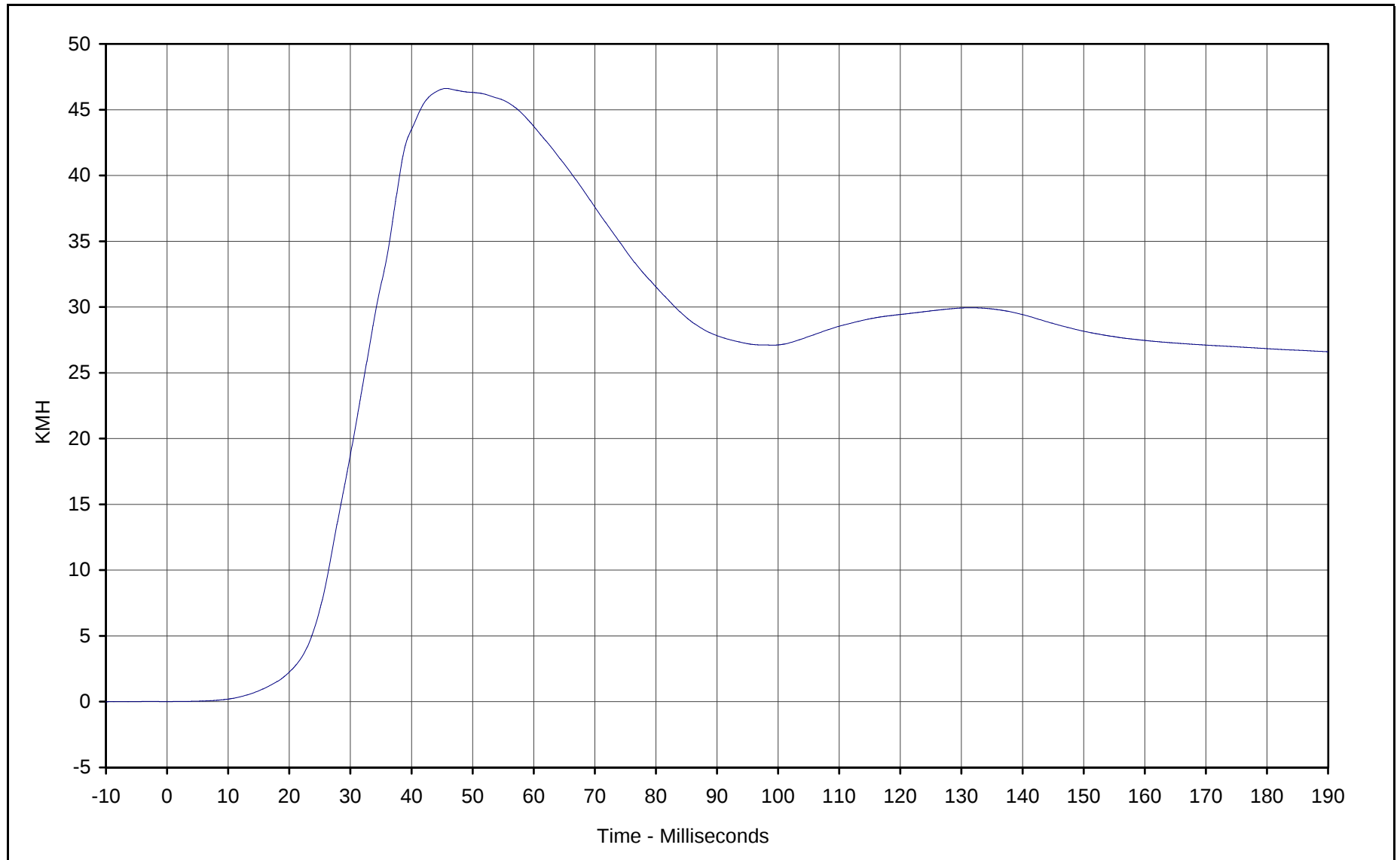




Curve Description: Pass. Pelvis Redundant Y
Maximum Value: 97.8 at 36.7 Milliseconds
Minimum Value: -24.0 at 74.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-024

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

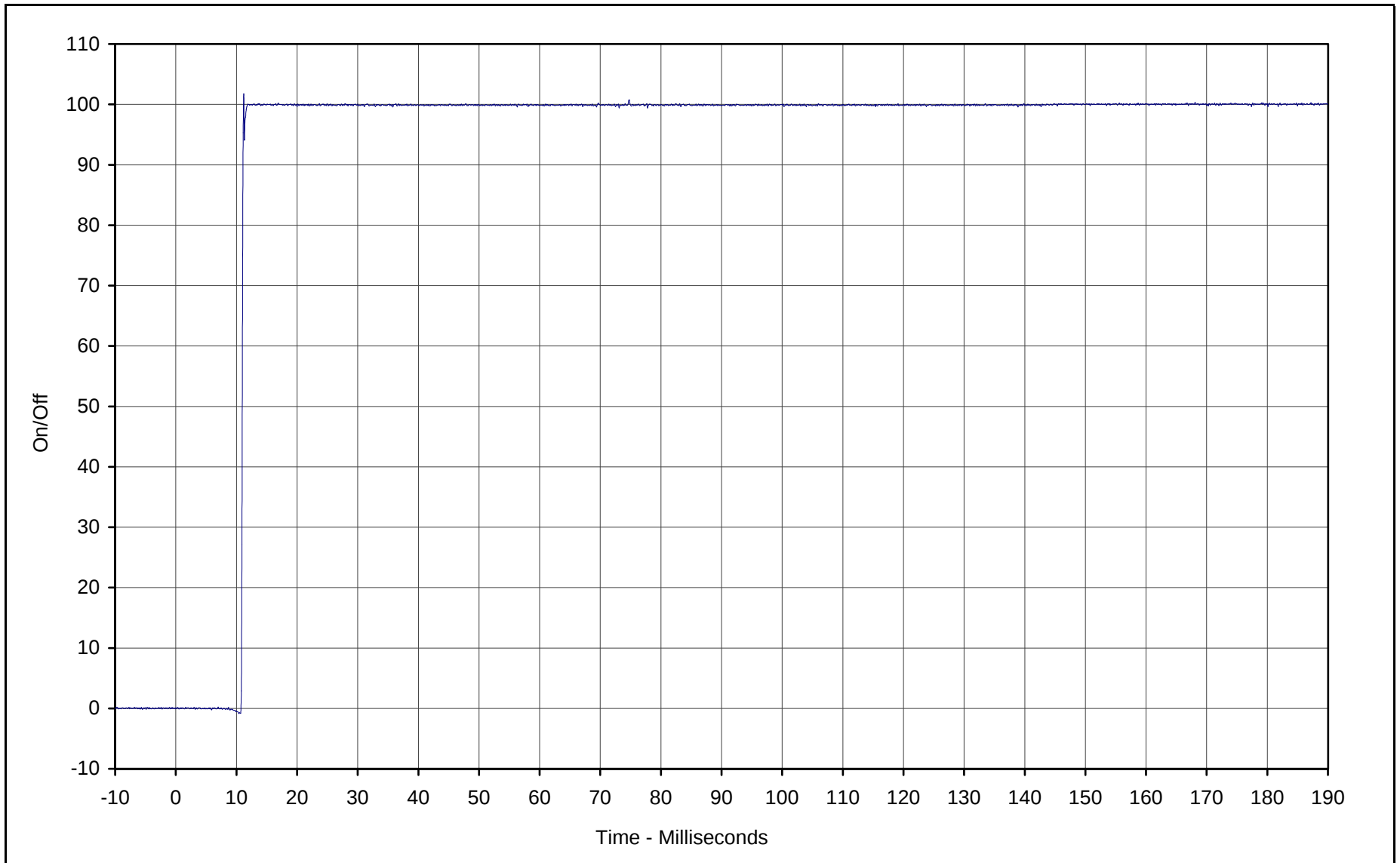




Curve Description: Pass. Pelvis Redundant Y Velocity
Maximum Value: 46.6 at 45.6 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-024

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

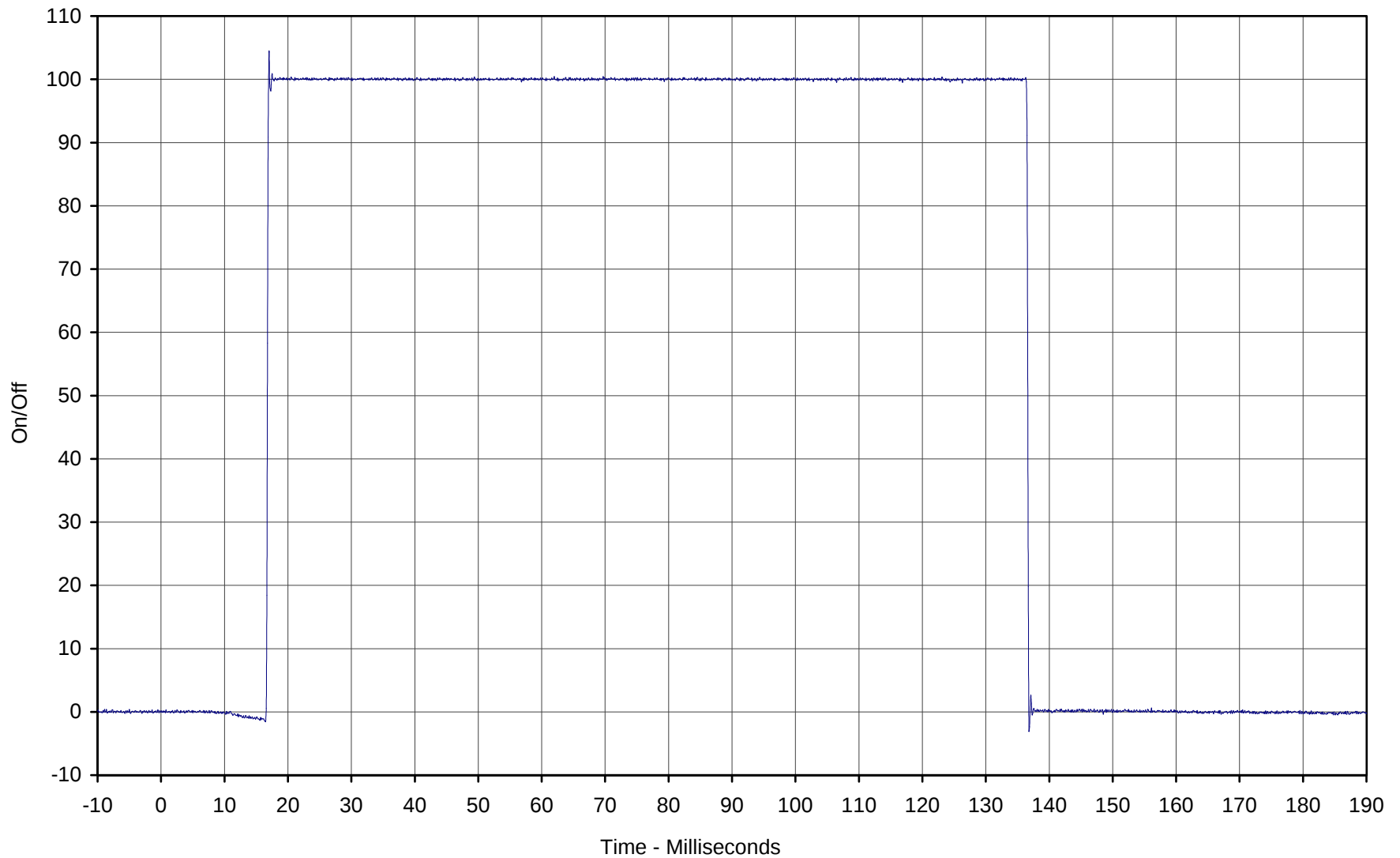




Curve Description: Pass. Thorax Contact
Maximum Value: 101.8 at 11.2 Milliseconds
Crossing Point: 50% at 11.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-025

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

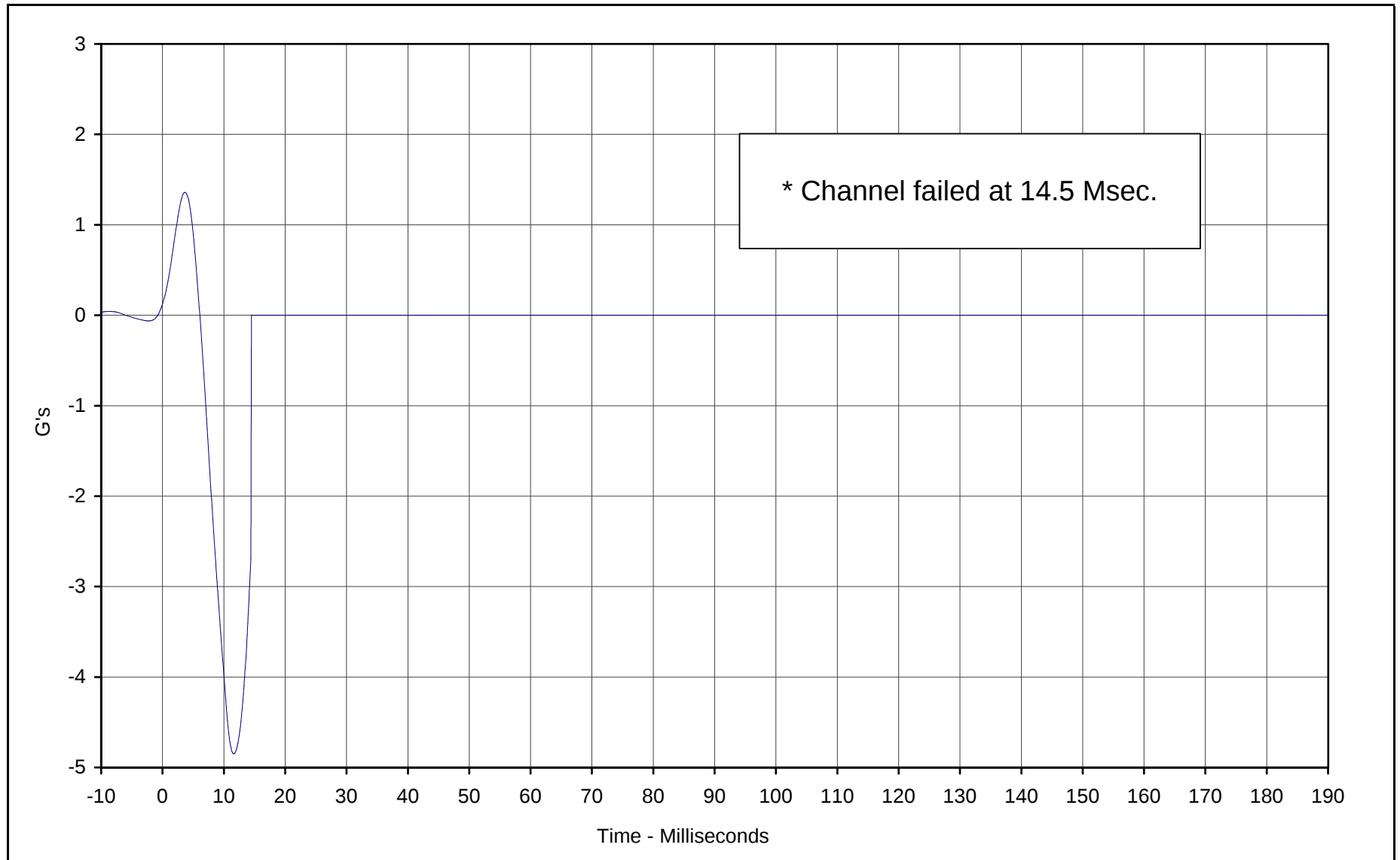




Curve Description: Pass. Pelvis Contact
Maximum Value: 104.3 at 17.0 Milliseconds
Crossing Point: 50% at 16.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-026

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Right Sill at Front Seat X *

Maximum Value: 1.4 at 3.7 Milliseconds

Minimum Value: -4.8 at 11.6 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/01

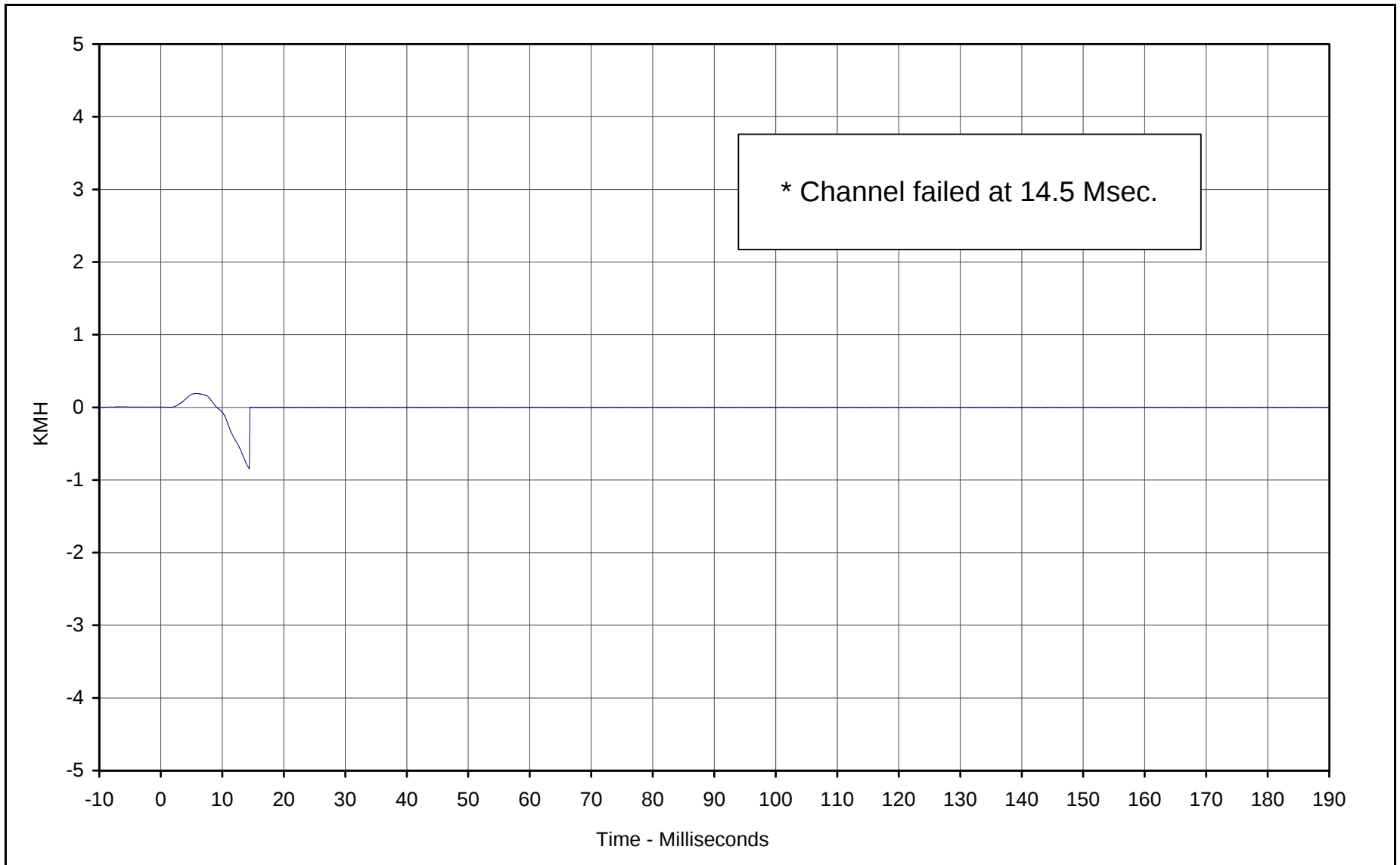
Curve Number: FIL-027

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 14.5 Msec.





Curve Description: Right Sill at Front Seat X Velocity *

Maximum Value: 0.2 at 5.8 Milliseconds

Minimum Value: -0.8 at 14.4 Milliseconds

SAE Filter Class: 180

Date of Test: 11/19/01

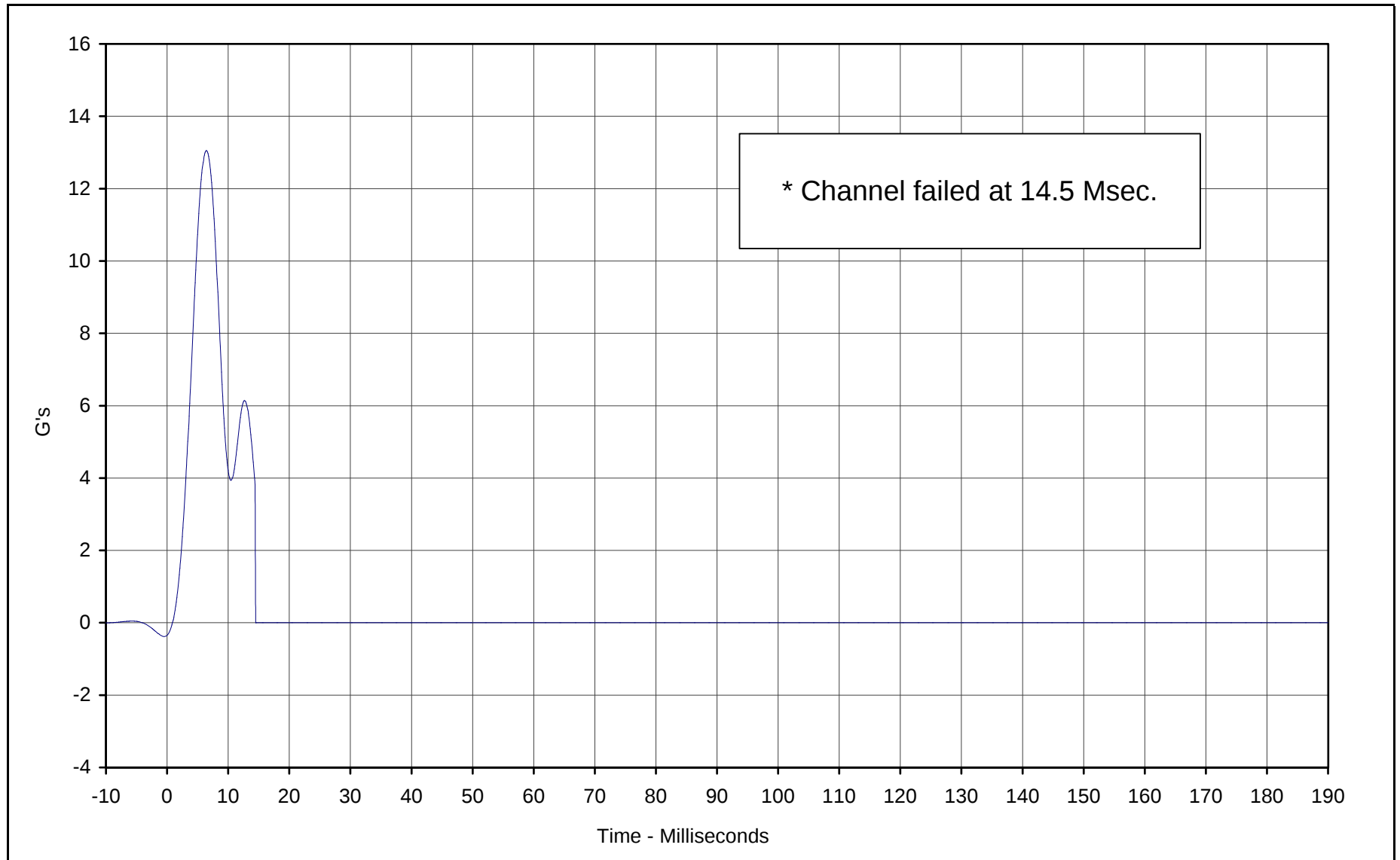
Curve Number: IN1-027

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 14.5 Msec.





Curve Description: Right Sill at Front Seat Y *

Maximum Value: 13.1 at 6.4 Milliseconds

Minimum Value: -0.3 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/01

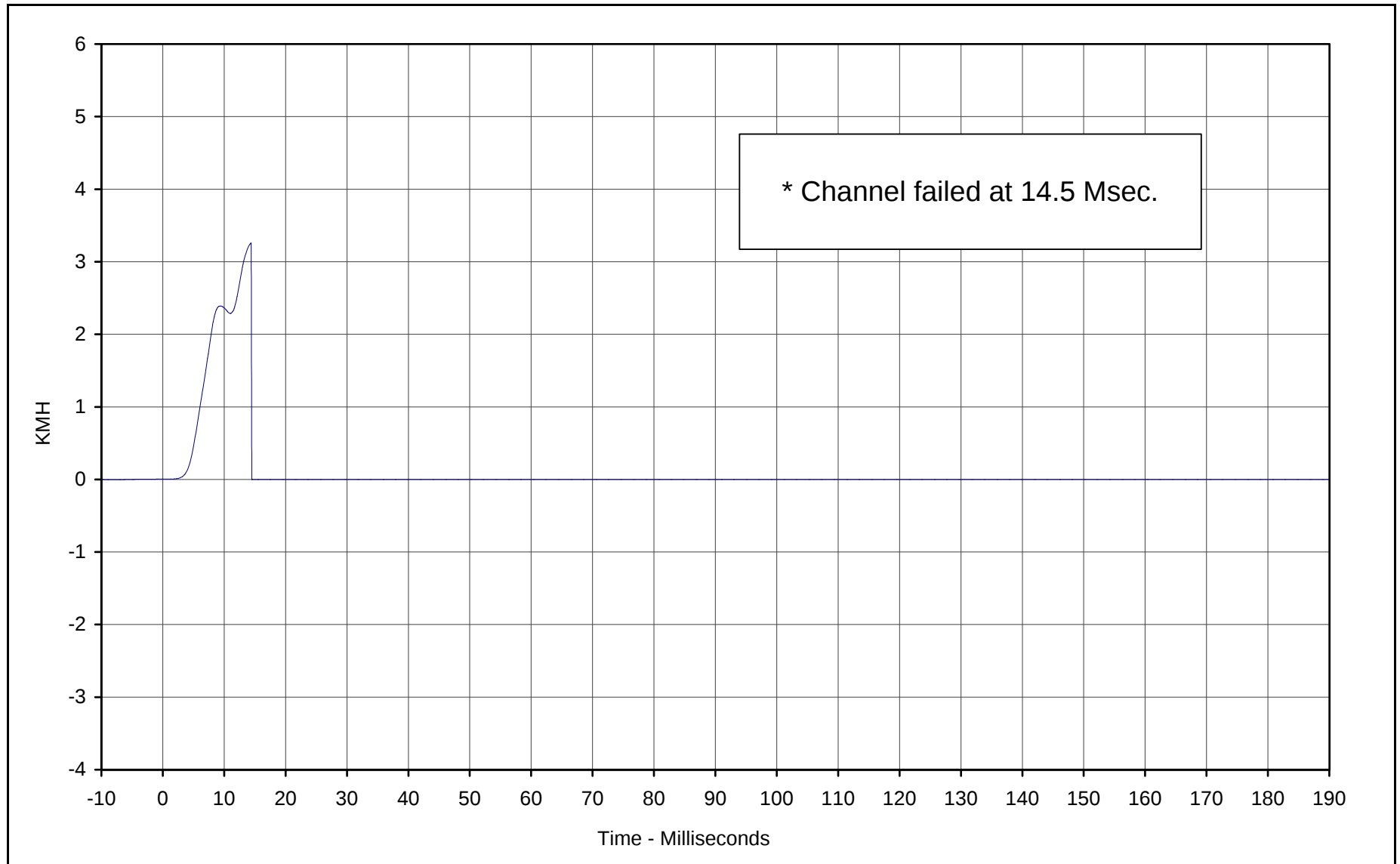
Curve Number: FIL-028

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 14.5 Msec.





Curve Description: Right Sill at Front Seat Y Velocity *

Maximum Value: 3.3 at 14.4 Milliseconds

Minimum Value: 0.0 at 14.5 Milliseconds

SAE Filter Class: 180

Date of Test: 11/19/01

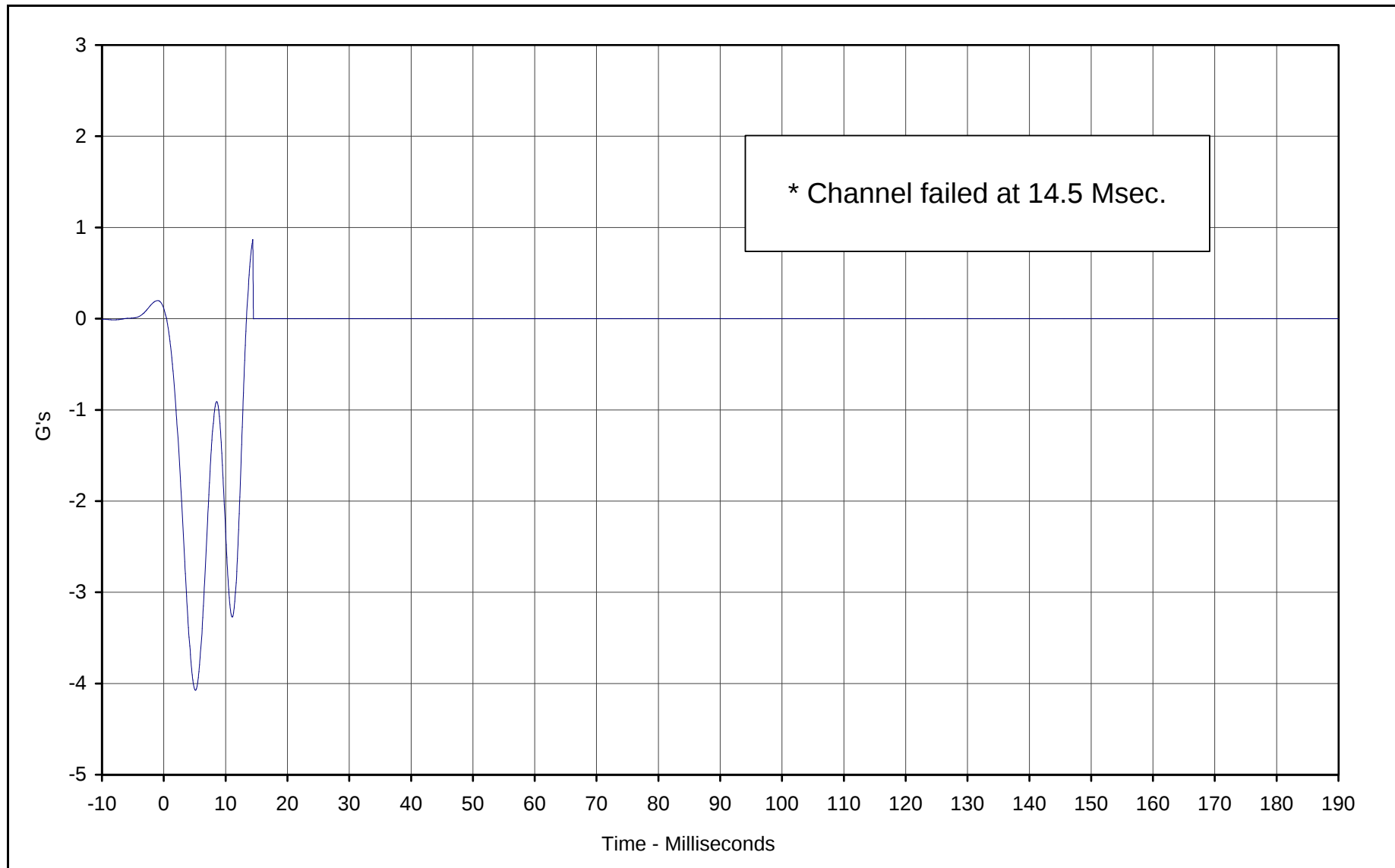
Curve Number: IN1-028

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 14.5 Msec.





Curve Description: Right Sill at Front Seat Z *

Maximum Value: 0.9 at 14.4 Milliseconds

Minimum Value: -4.1 at 5.1 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/01

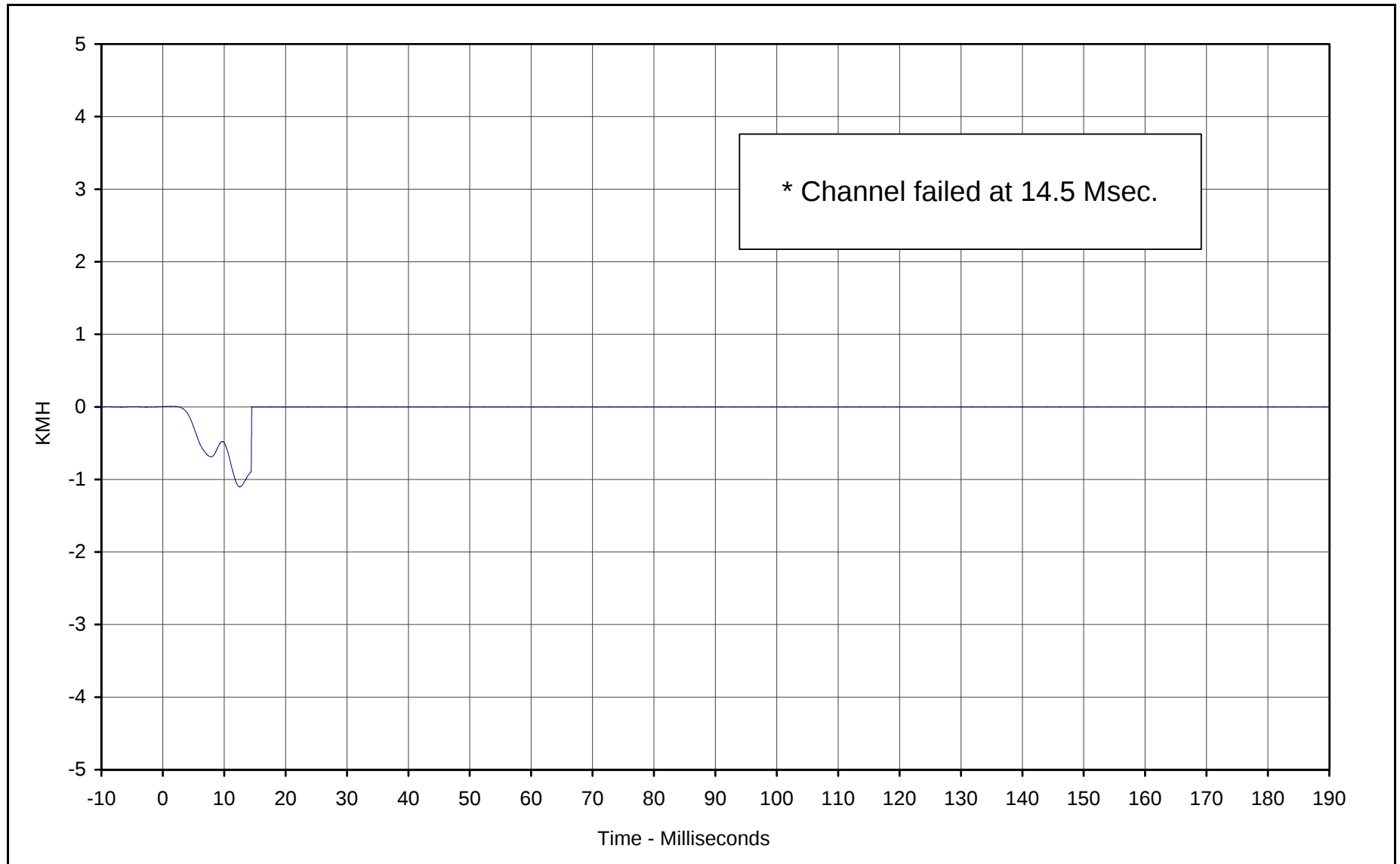
Curve Number: FIL-029

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 14.5 Msec.





Curve Description: Right Sill at Front Seat Z Velocity *

Maximum Value: 0.0 at 1.4 Milliseconds

Minimum Value: -1.1 at 12.5 Milliseconds

SAE Filter Class: 180

Date of Test: 11/19/01

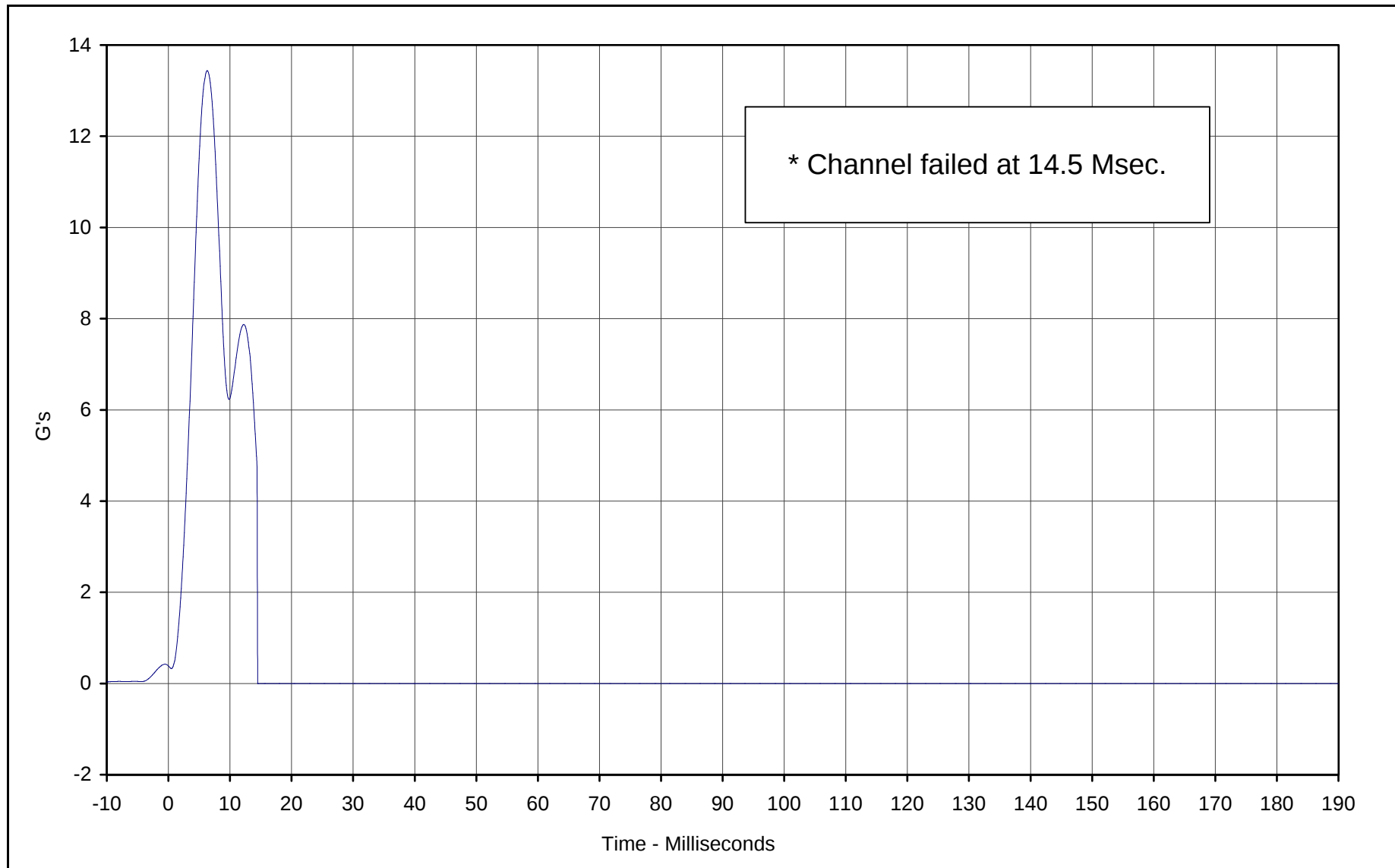
Curve Number: IN1-029

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 14.5 Msec.





Curve Description: Right Sill at Front Seat Resultant *

Maximum Value: 13.4 at 6.3 Milliseconds

Minimum Value: 0.0 at 14.5 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/01

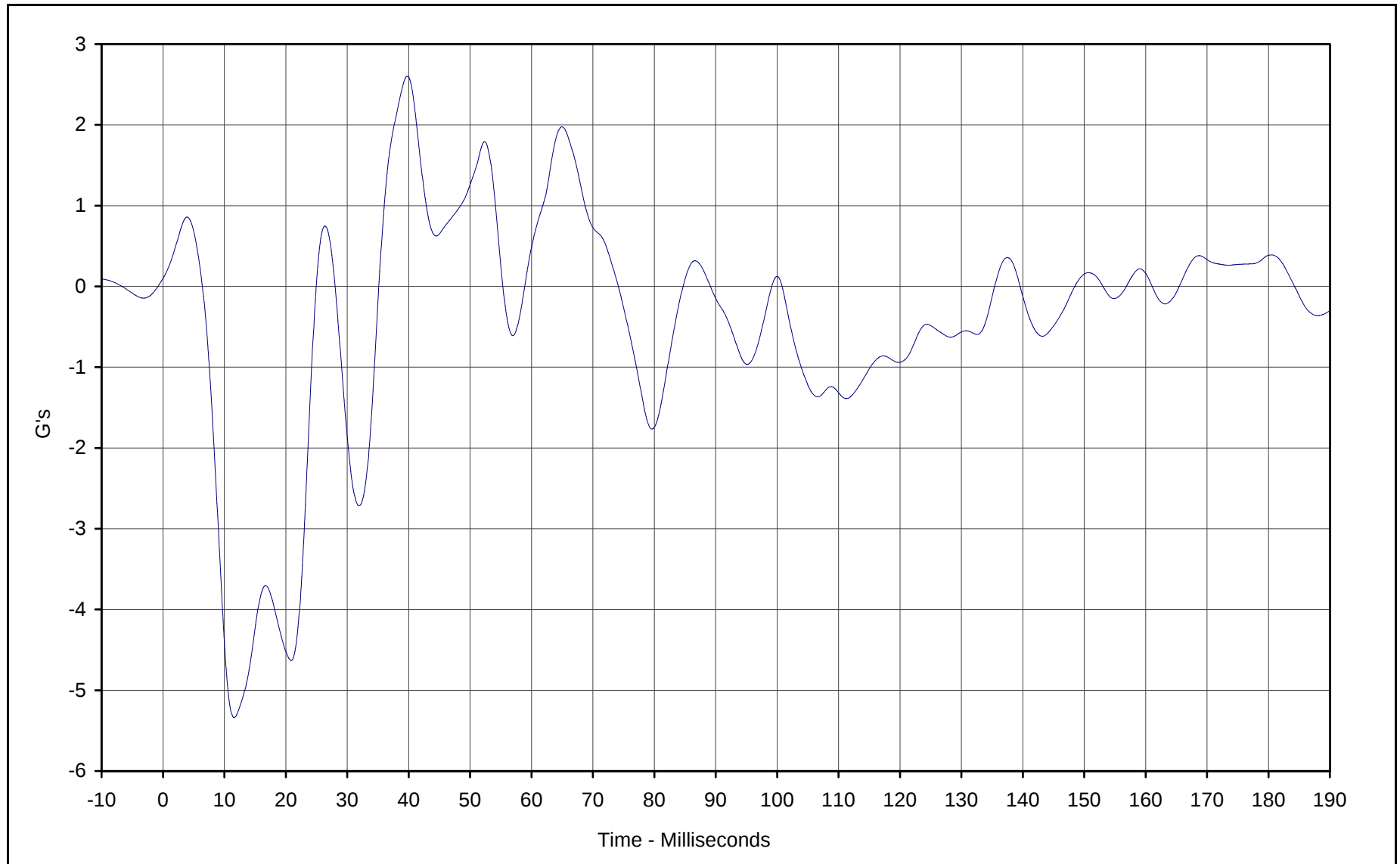
Curve Number: RES-027

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channels failed at 14.5 Msec.

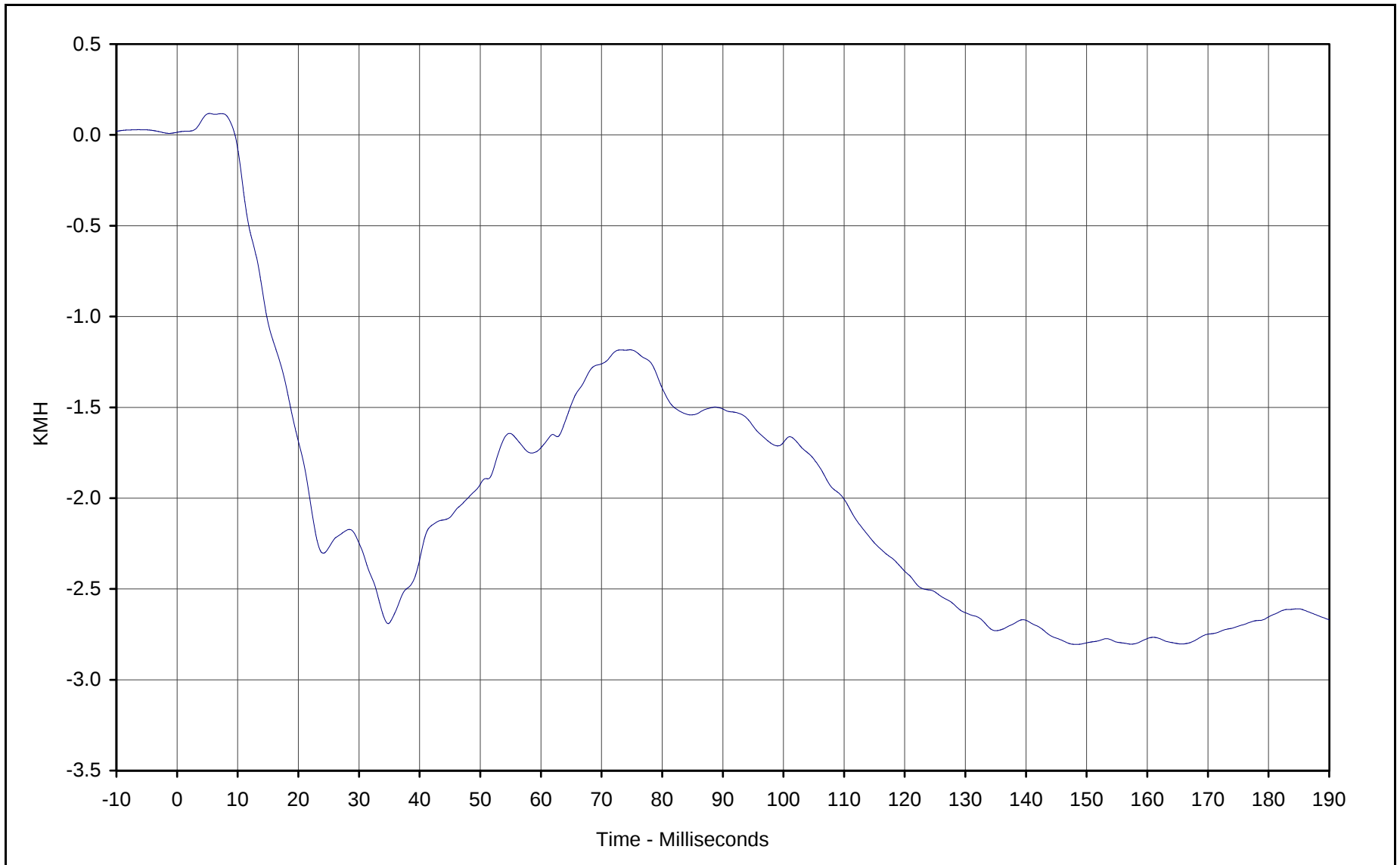




Curve Description: Right Sill at Rear Seat X
Maximum Value: 2.6 at 39.8 Milliseconds
Minimum Value: -5.3 at 11.6 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-030

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



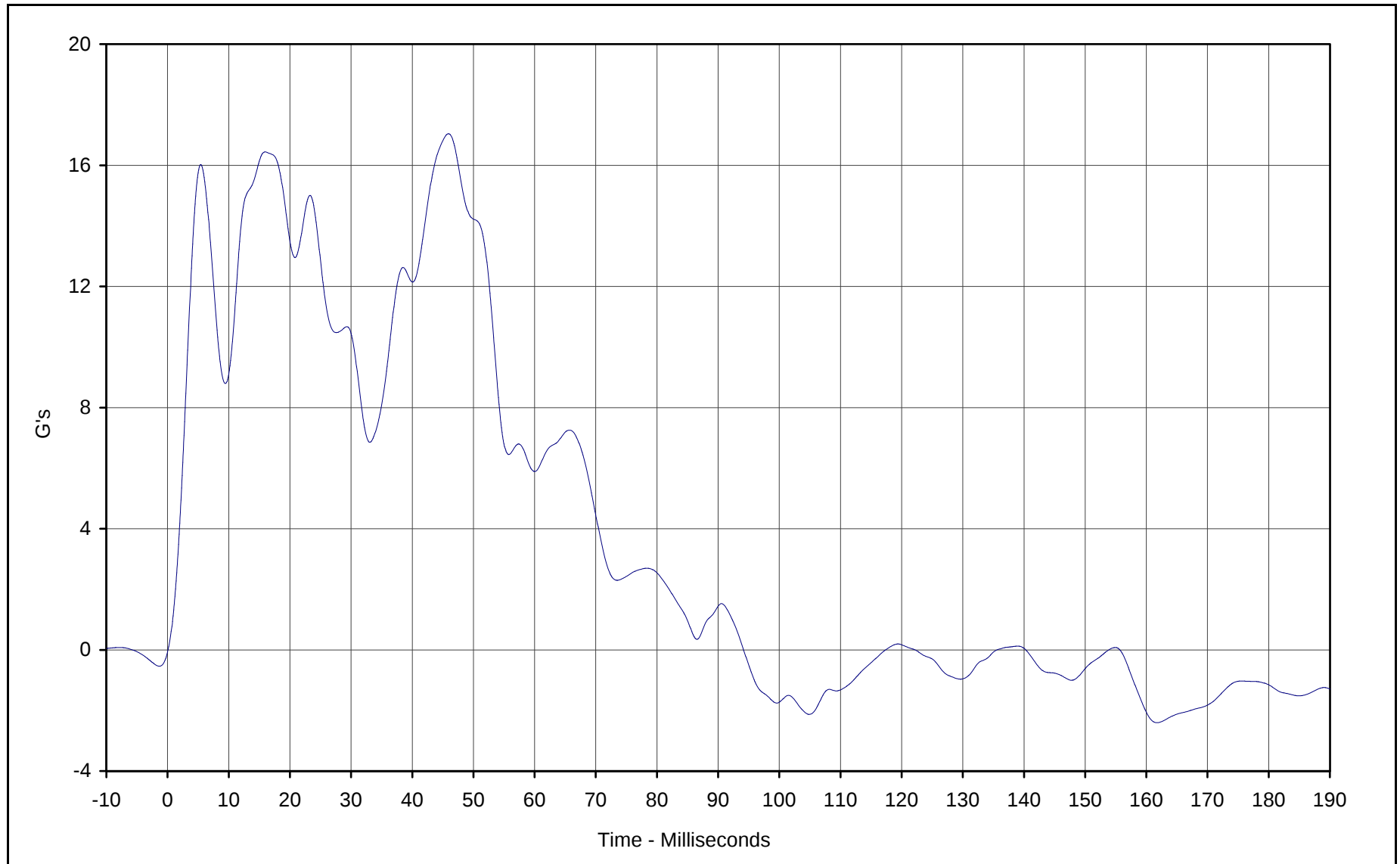


Curve Description: Right Sill at Rear Seat X Velocity
Maximum Value: 0.1 at 5.4 Milliseconds
Minimum Value: -2.8 at 148.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-030

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



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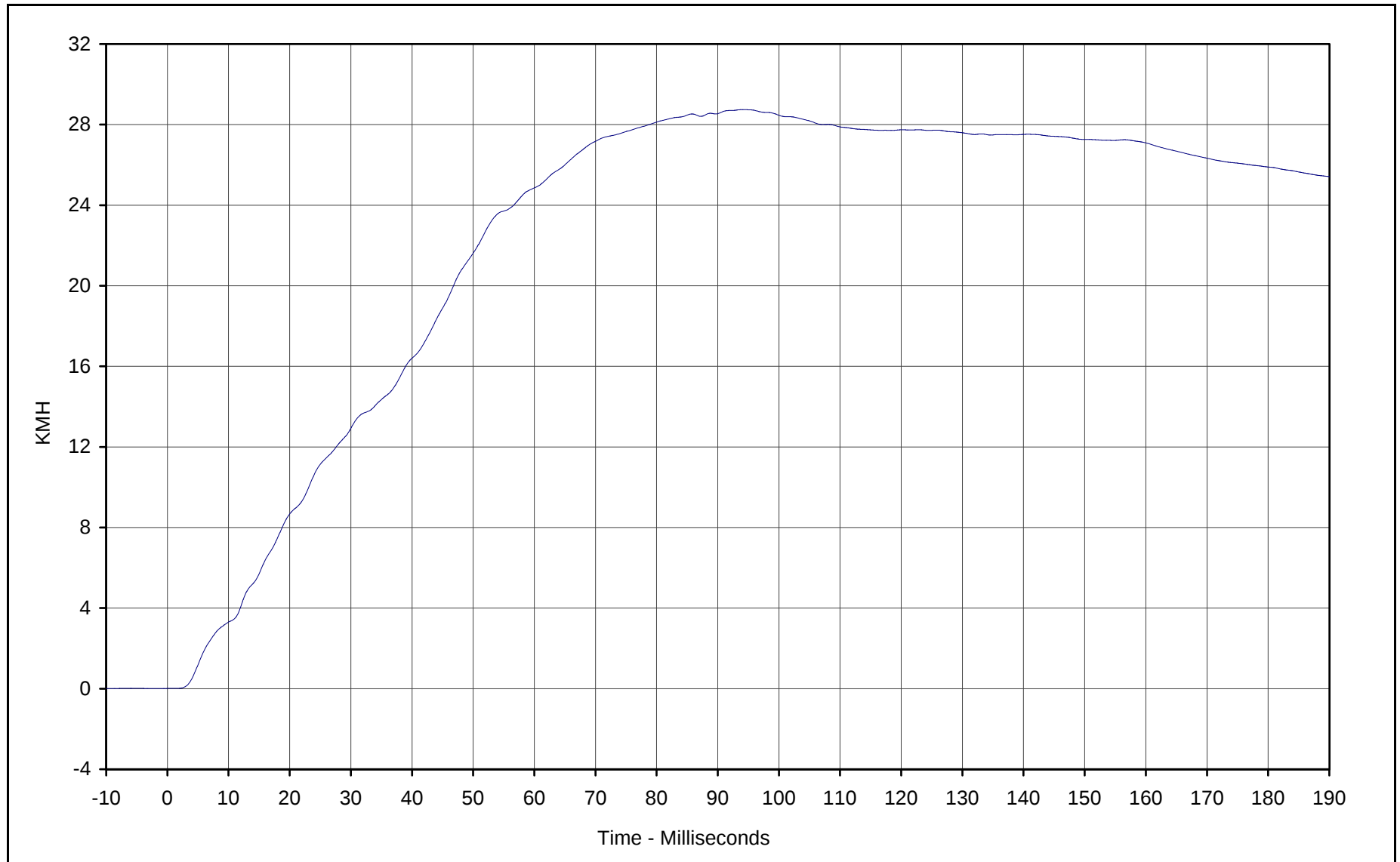


Curve Description: Right Sill at Rear Seat Y
Maximum Value: 17.0 at 45.9 Milliseconds
Minimum Value: -2.4 at 161.8 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-031

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



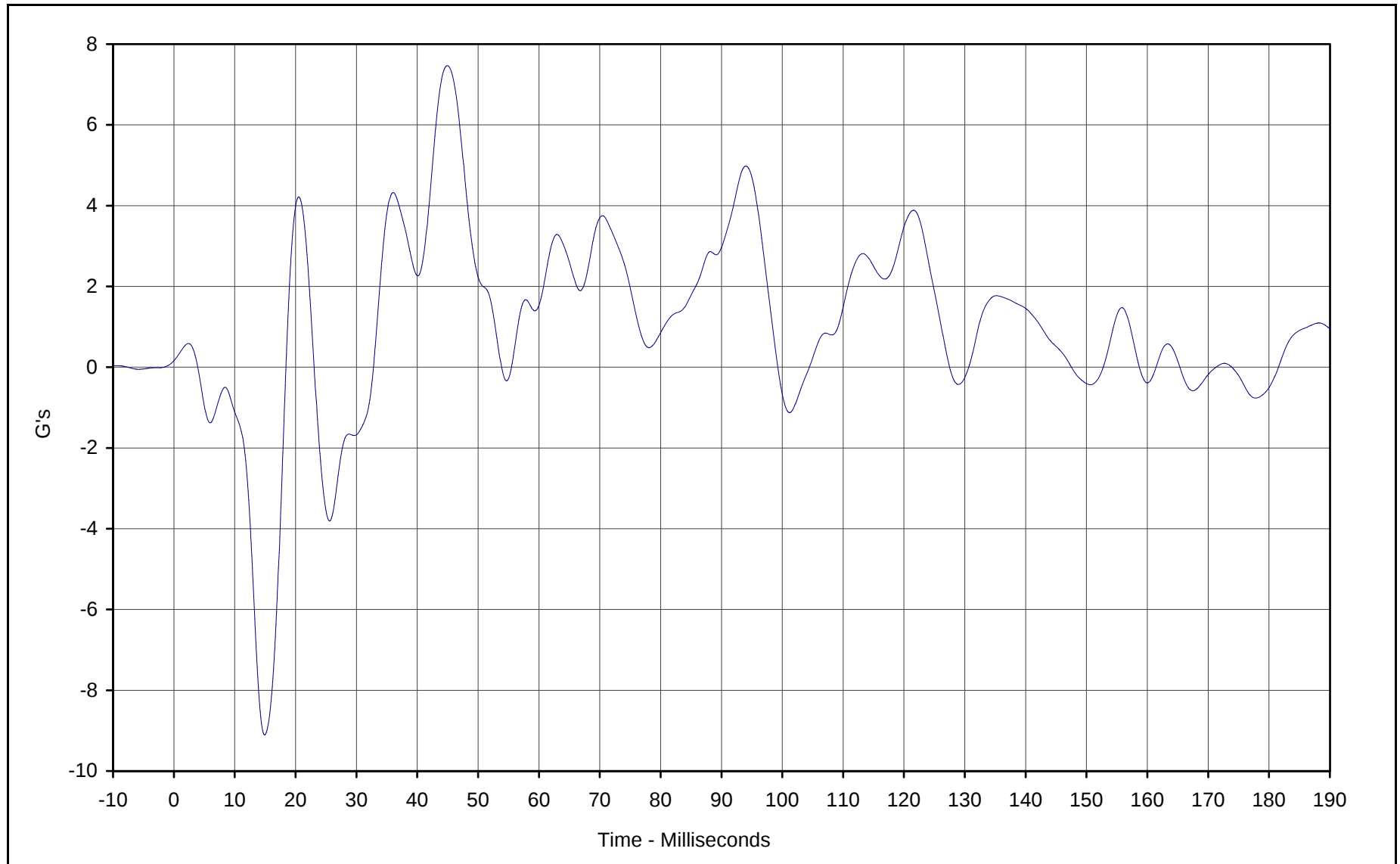
KAR21113-01



Curve Description: Right Sill at Rear Seat Y Velocity
Maximum Value: 28.7 at 94.1 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-031

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

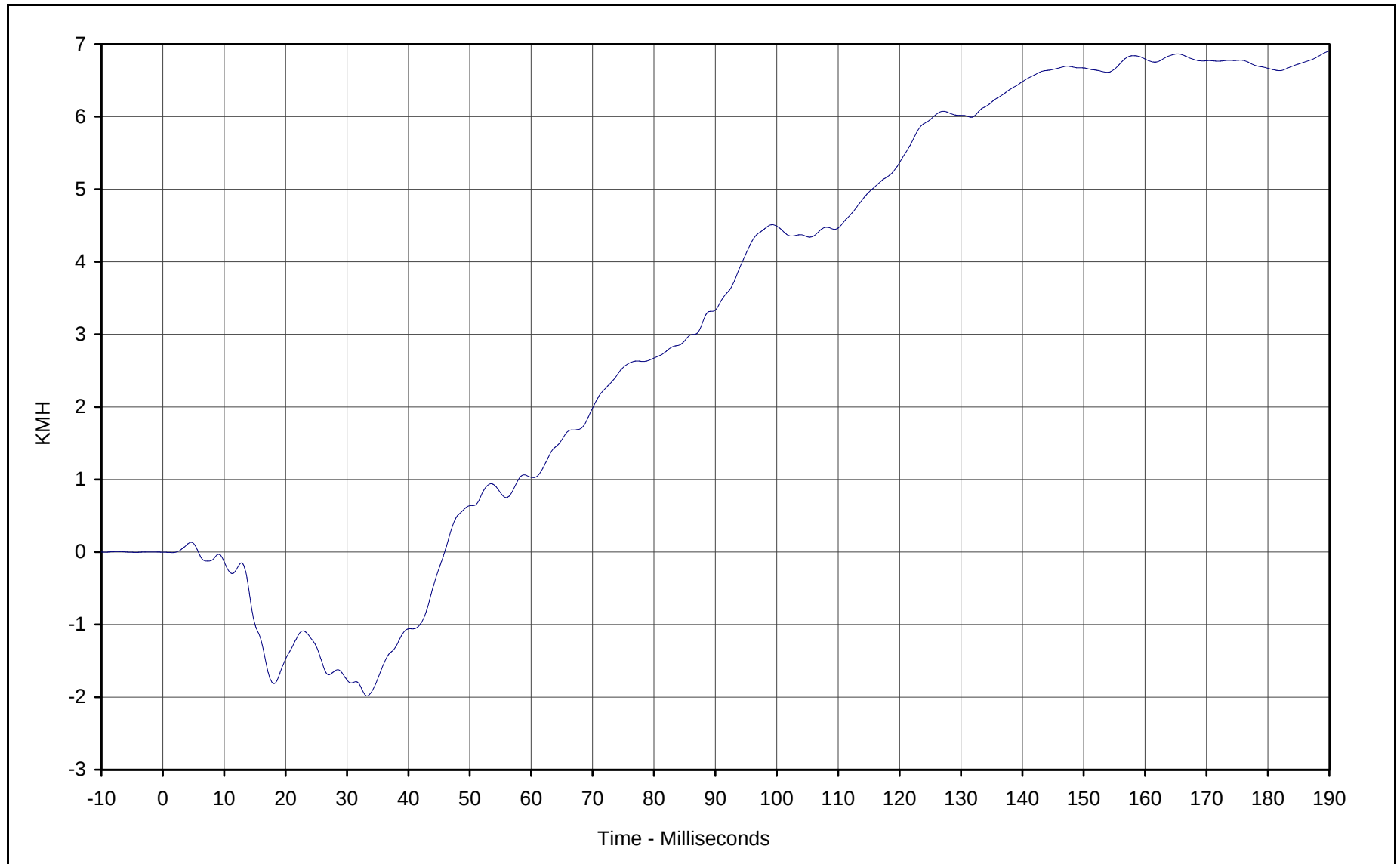




Curve Description: Right Sill at Rear Seat Z
Maximum Value: 7.5 at 44.9 Milliseconds
Minimum Value: -9.1 at 14.9 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-032

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

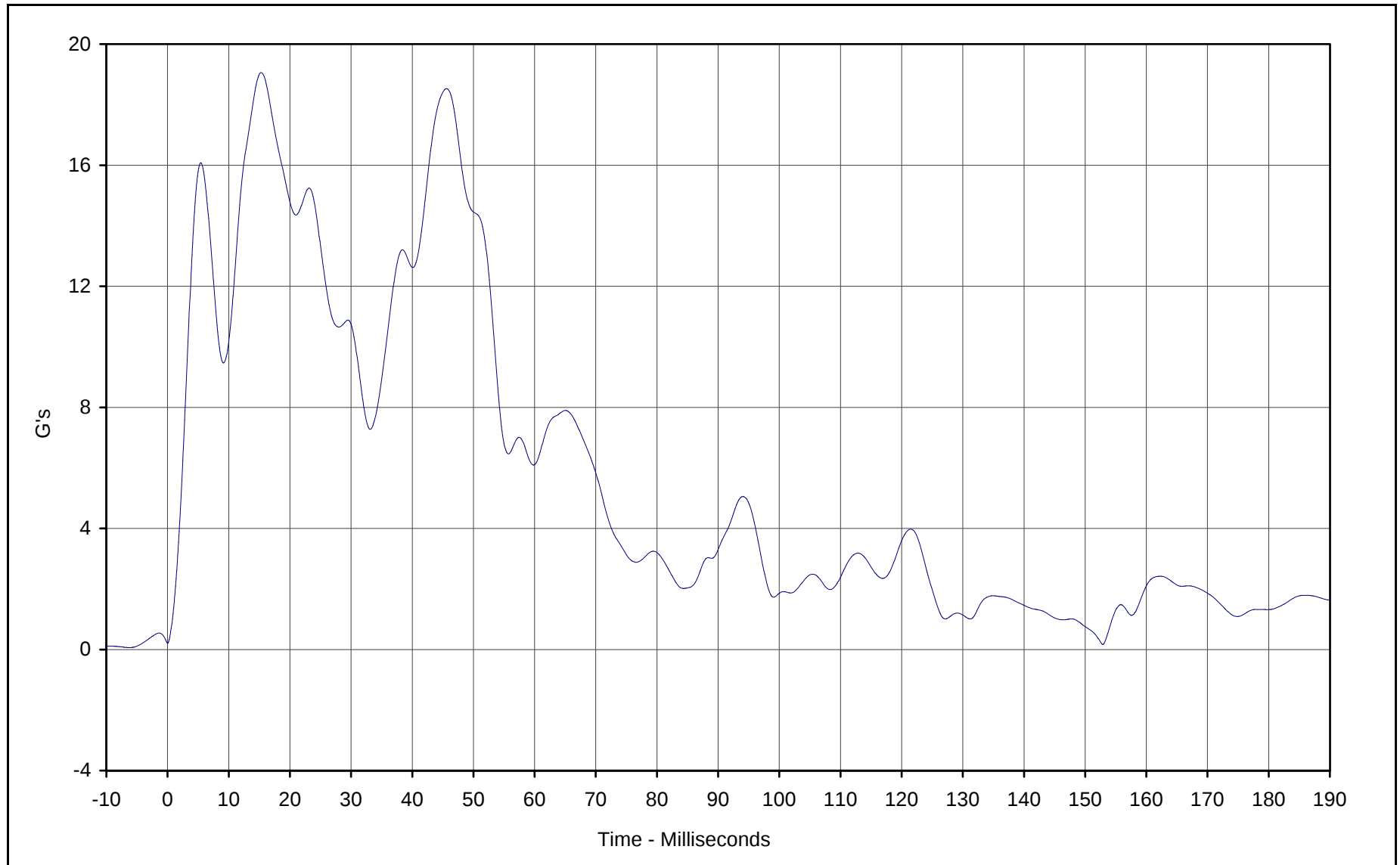




Curve Description: Right Sill at Rear Seat Z Velocity
Maximum Value: 6.9 at 189.9 Milliseconds
Minimum Value: -2.0 at 33.3 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-032

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

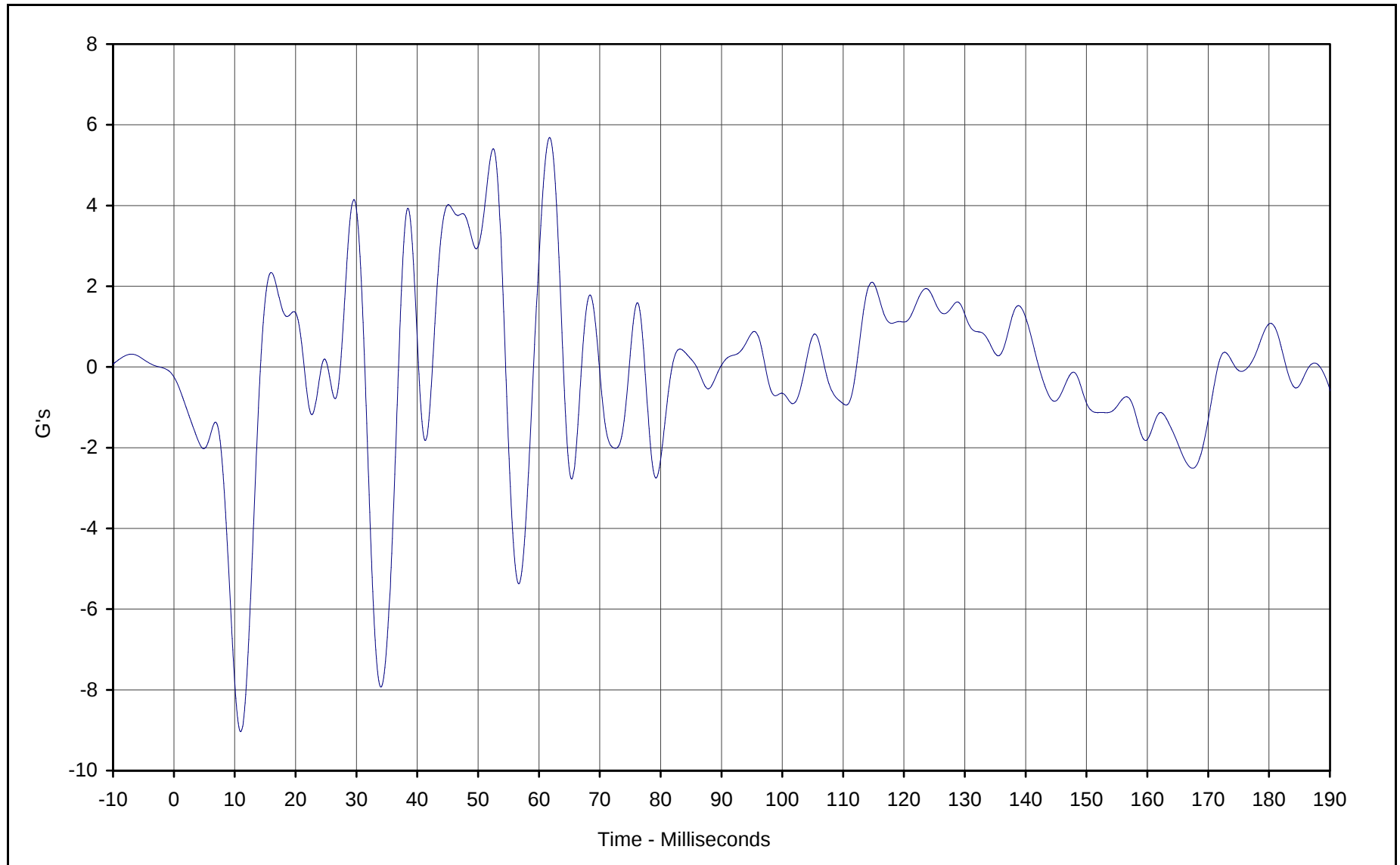




Curve Description: Right Sill at Rear Seat Resultant
Maximum Value: 19.1 at 15.3 Milliseconds
Minimum Value: 0.2 at 152.9 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: RES-030

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

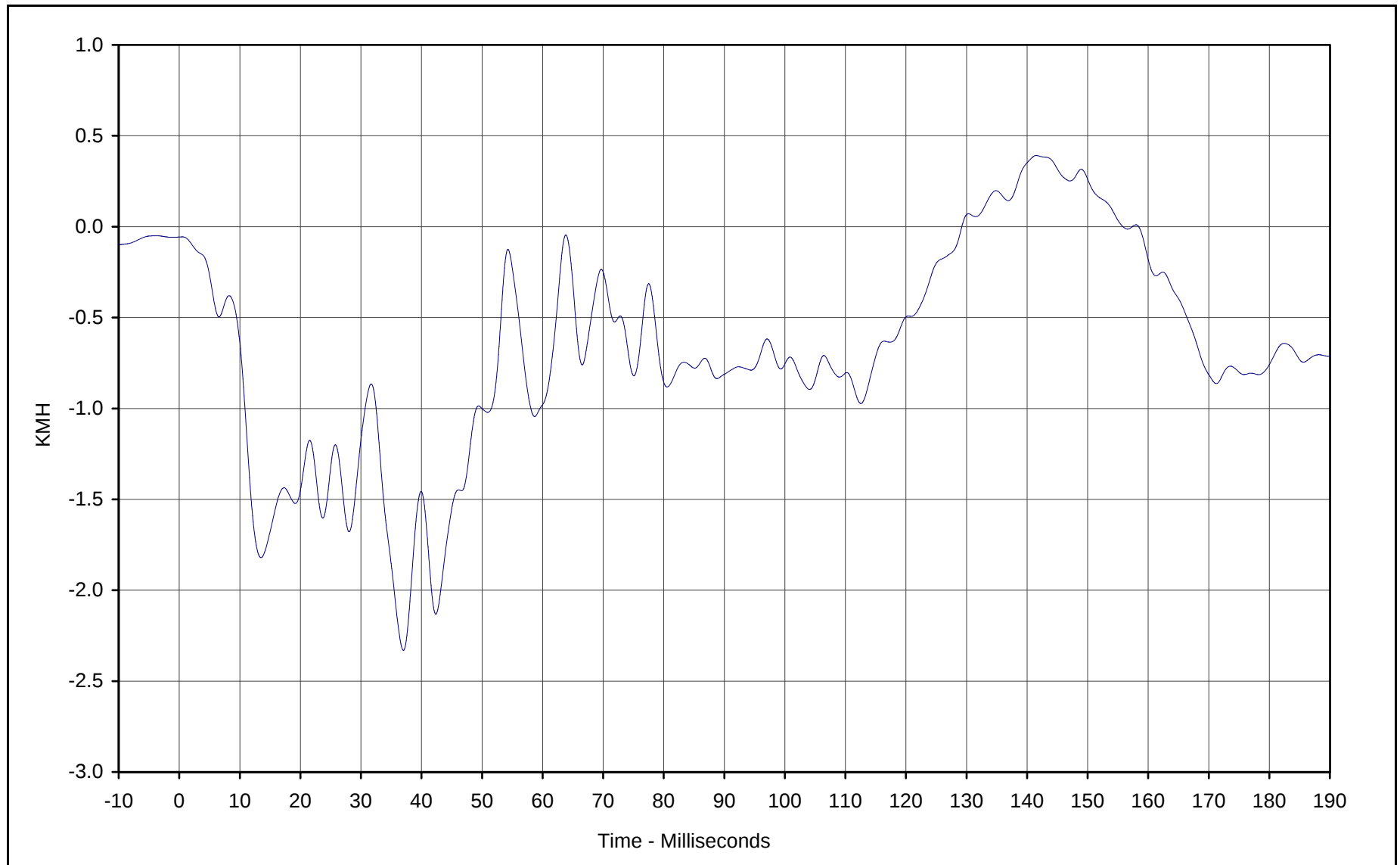




Curve Description: Rear Floor Above Axle X
Maximum Value: 5.7 at 61.8 Milliseconds
Minimum Value: -9.0 at 11.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-033

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

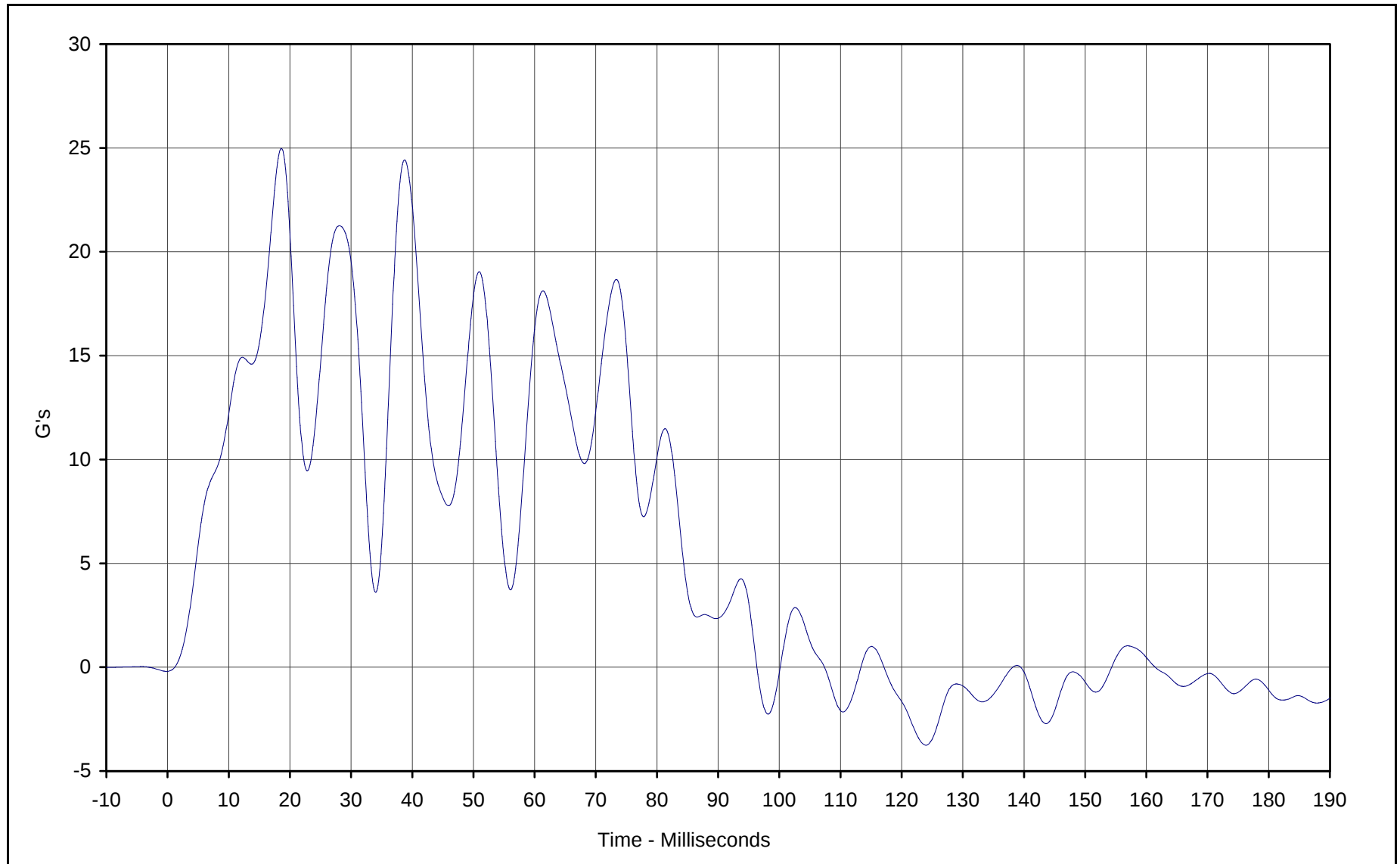




Curve Description: Rear Floor Above Axle X Velocity
Maximum Value: 0.4 at 141.5 Milliseconds
Minimum Value: -2.3 at 37.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-033

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

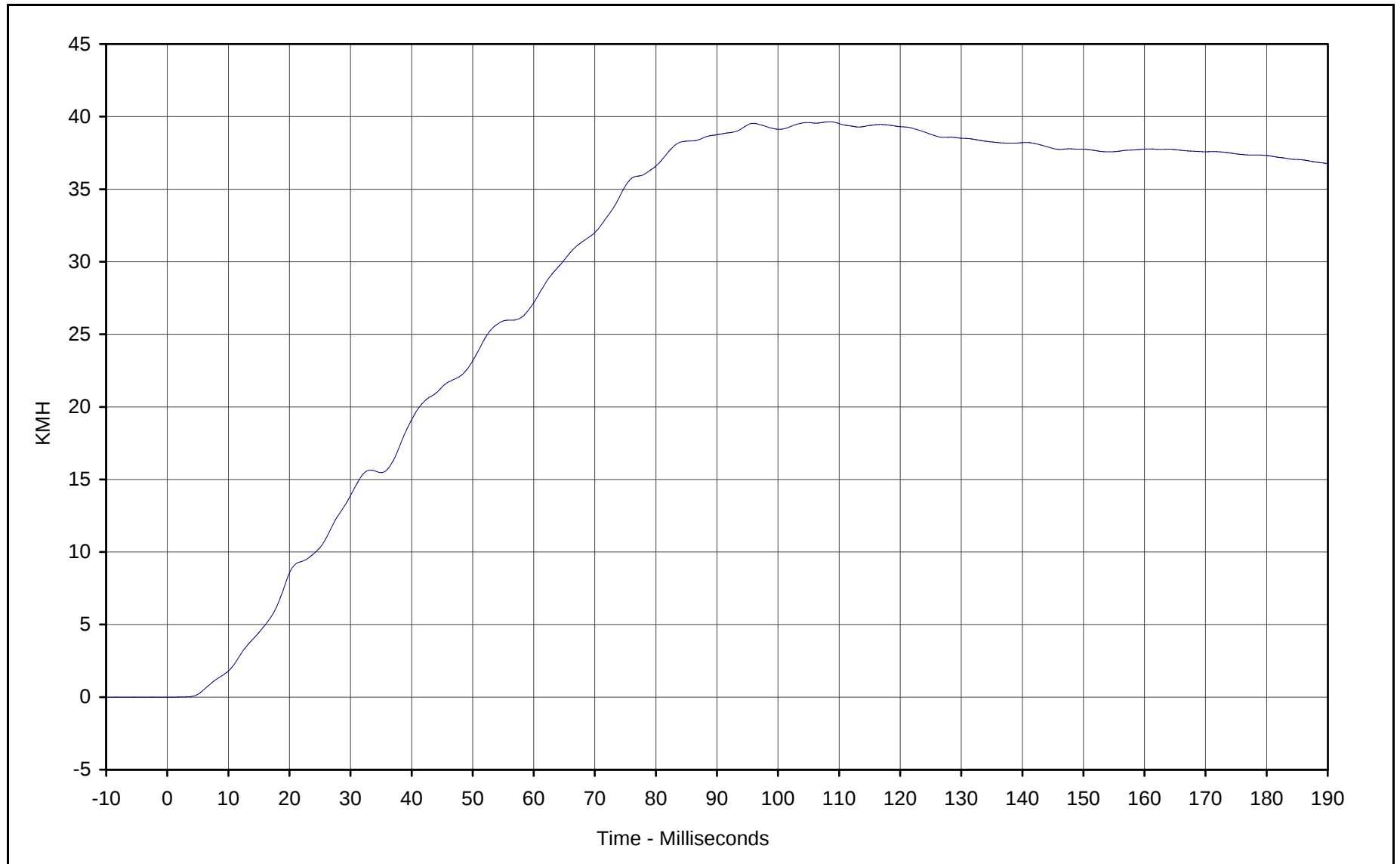




Curve Description: Rear Floor Above Axle Y
Maximum Value: 25.0 at 18.6 Milliseconds
Minimum Value: -3.8 at 124.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-034

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

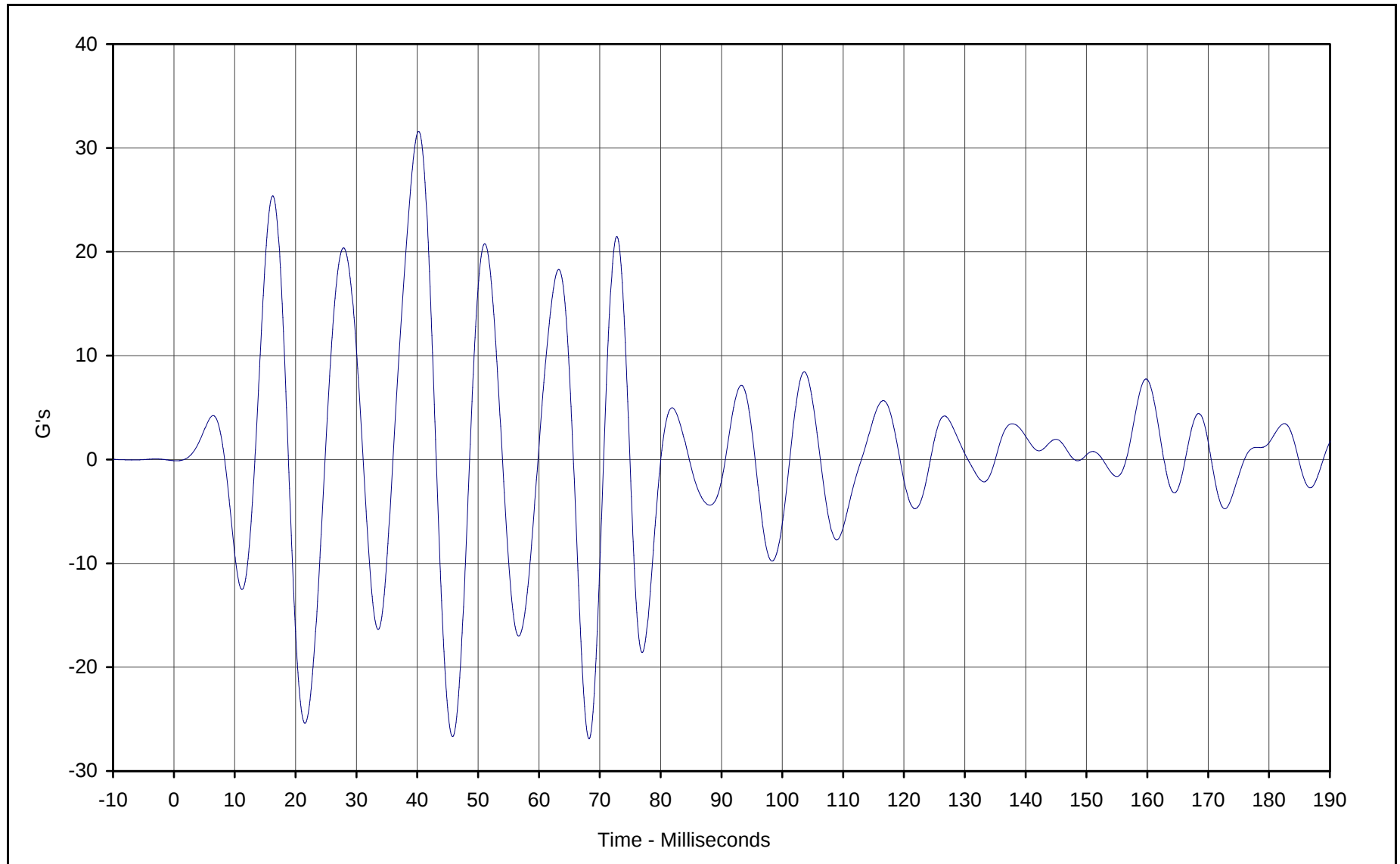




Curve Description: Rear Floor Above Axle Y Velocity
Maximum Value: 39.6 at 108.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-034

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

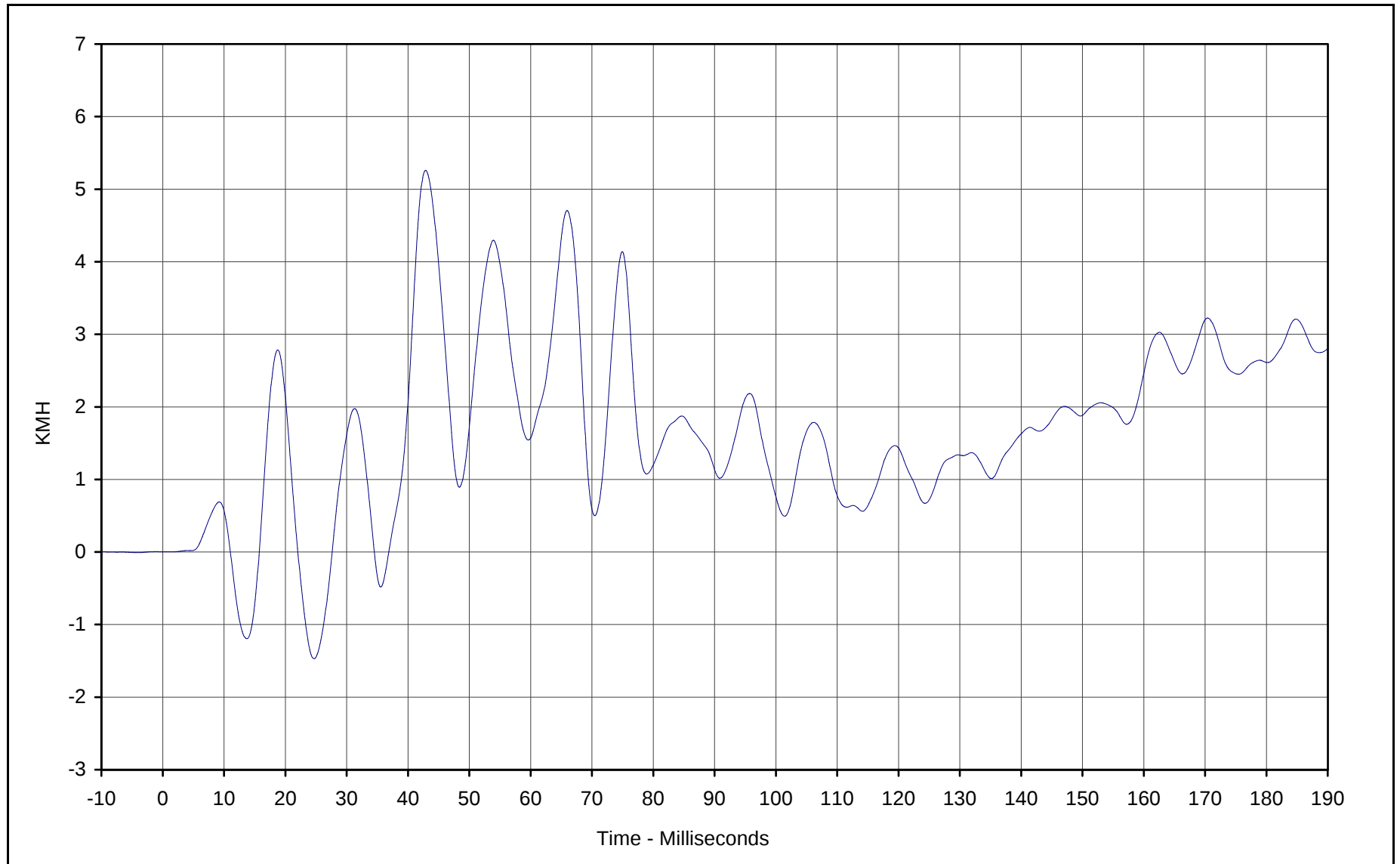




Curve Description: Rear Floor Above Axle Z
Maximum Value: 31.6 at 40.2 Milliseconds
Minimum Value: -26.9 at 68.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-035

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

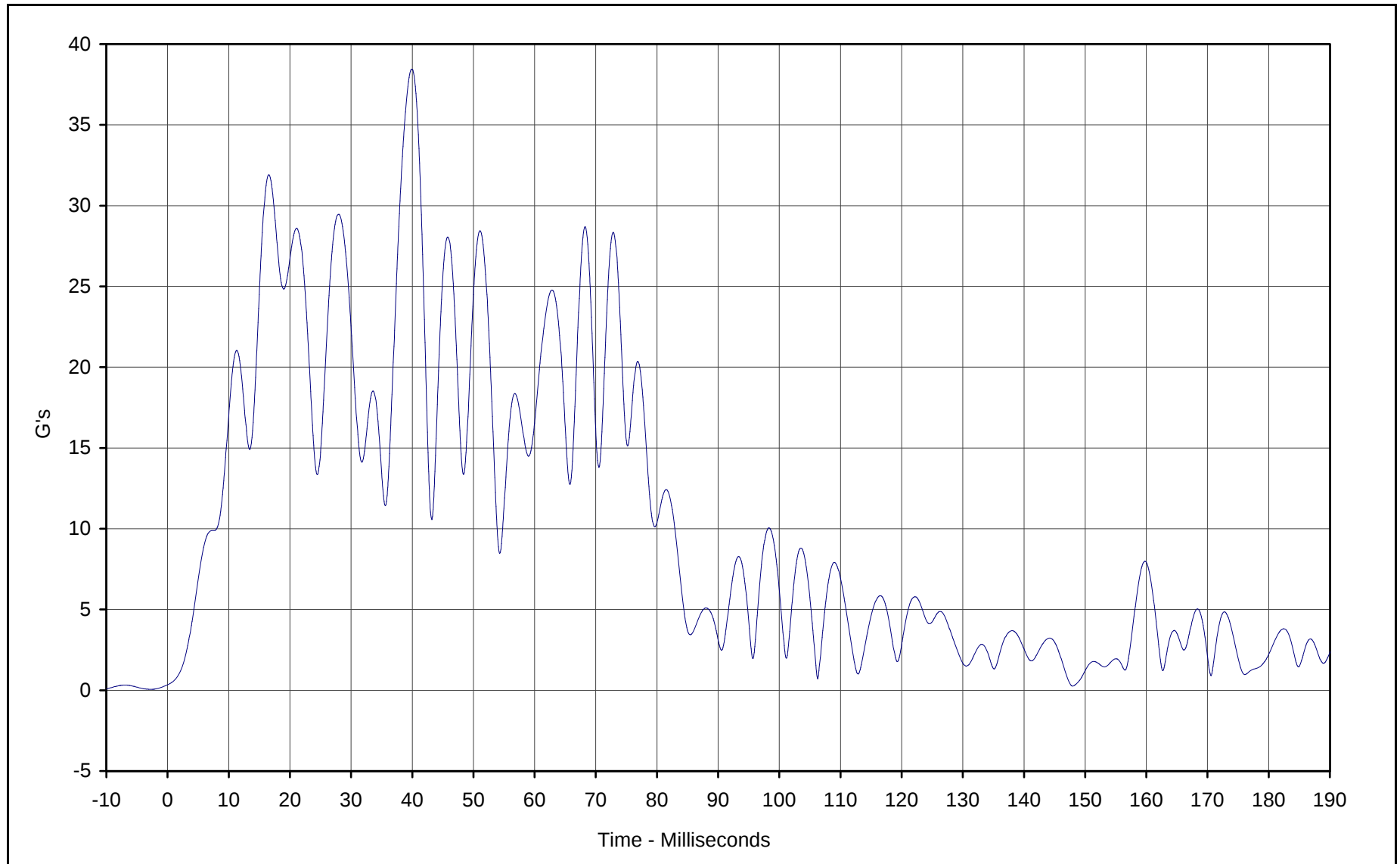




Curve Description: Rear Floor Above Axle Z Velocity
Maximum Value: 5.3 at 42.9 Milliseconds
Minimum Value: -1.5 at 24.7 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-035

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

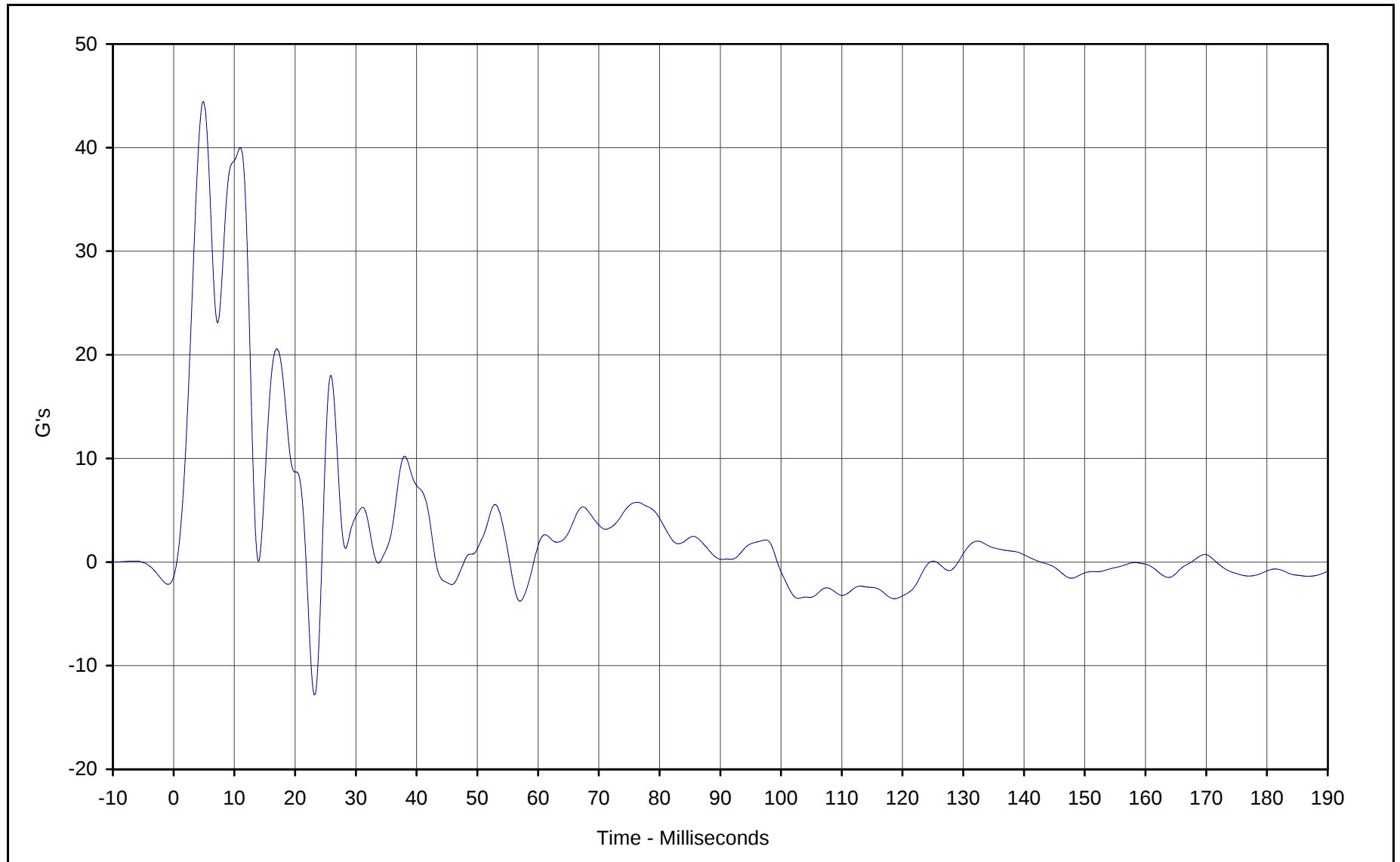




Curve Description: Rear Floor Above Axle Resultant
Maximum Value: 38.5 at 39.9 Milliseconds
Minimum Value: 0.3 at 148.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: RES-033

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

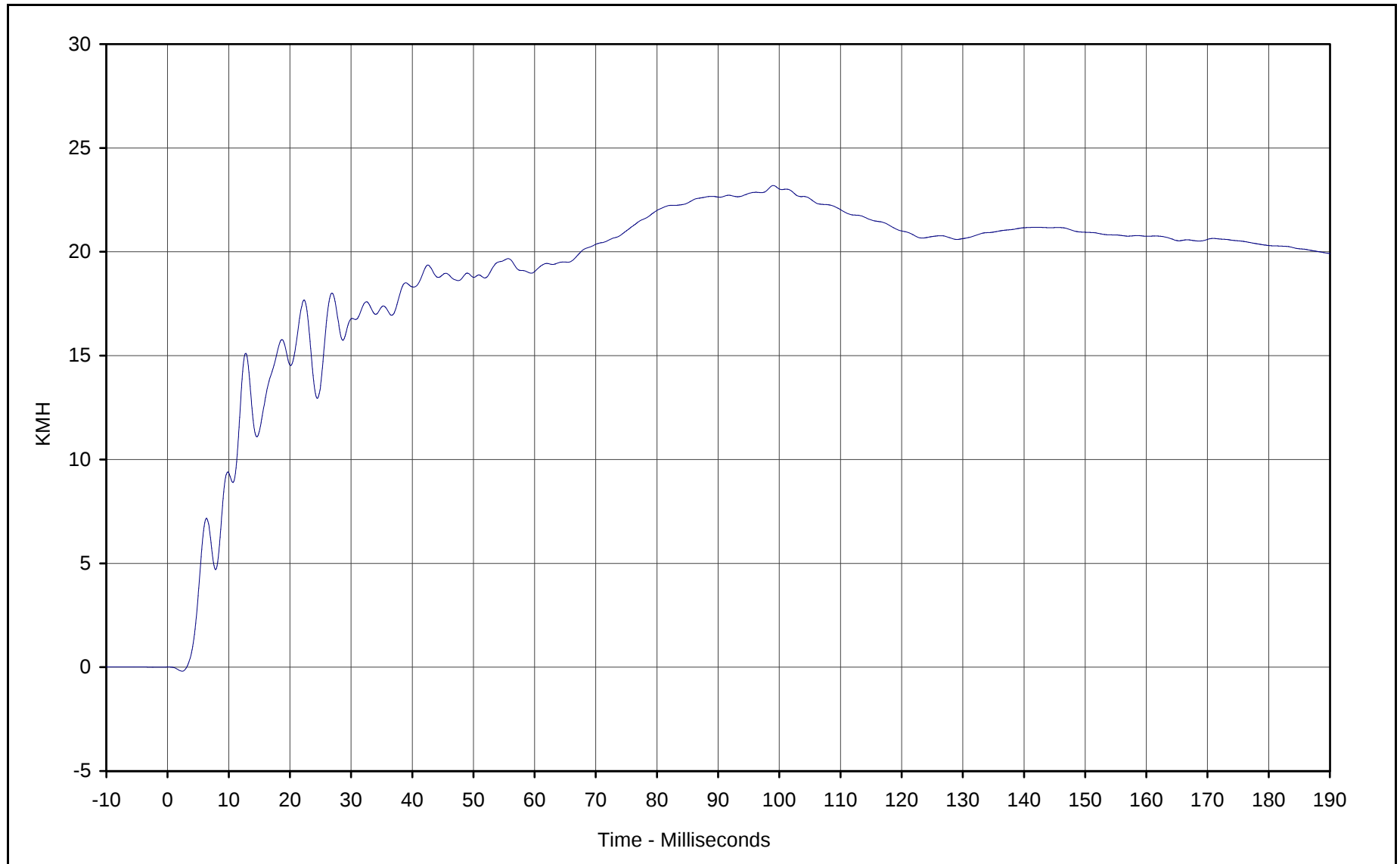




Curve Description: Left Sill at Rear Door Y
Maximum Value: 44.5 at 4.9 Milliseconds
Minimum Value: -12.8 at 23.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-036

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

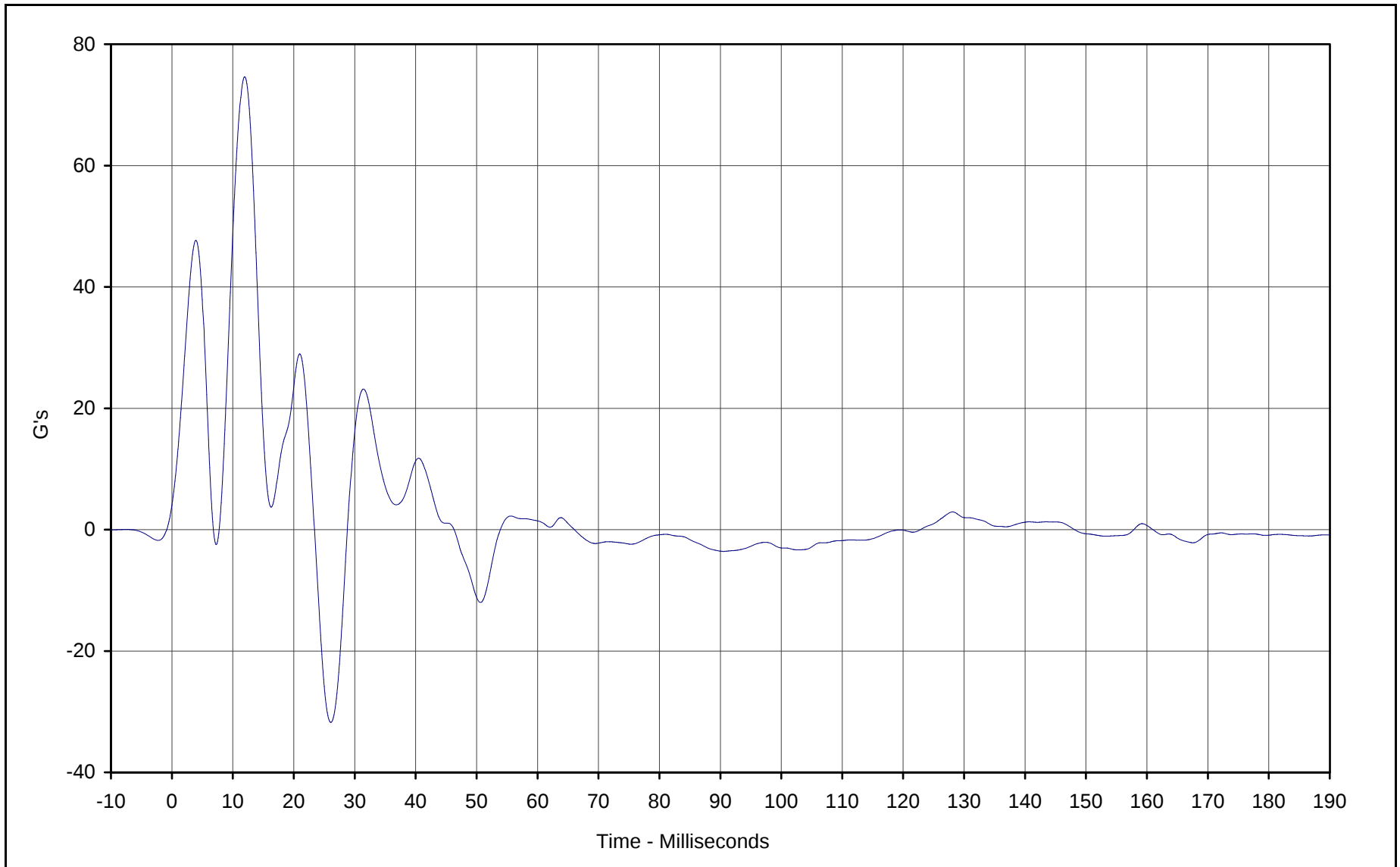




Curve Description: Left Sill at Rear Door Y Velocity
Maximum Value: 23.2 at 99.0 Milliseconds
Minimum Value: -0.2 at 2.4 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-036

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

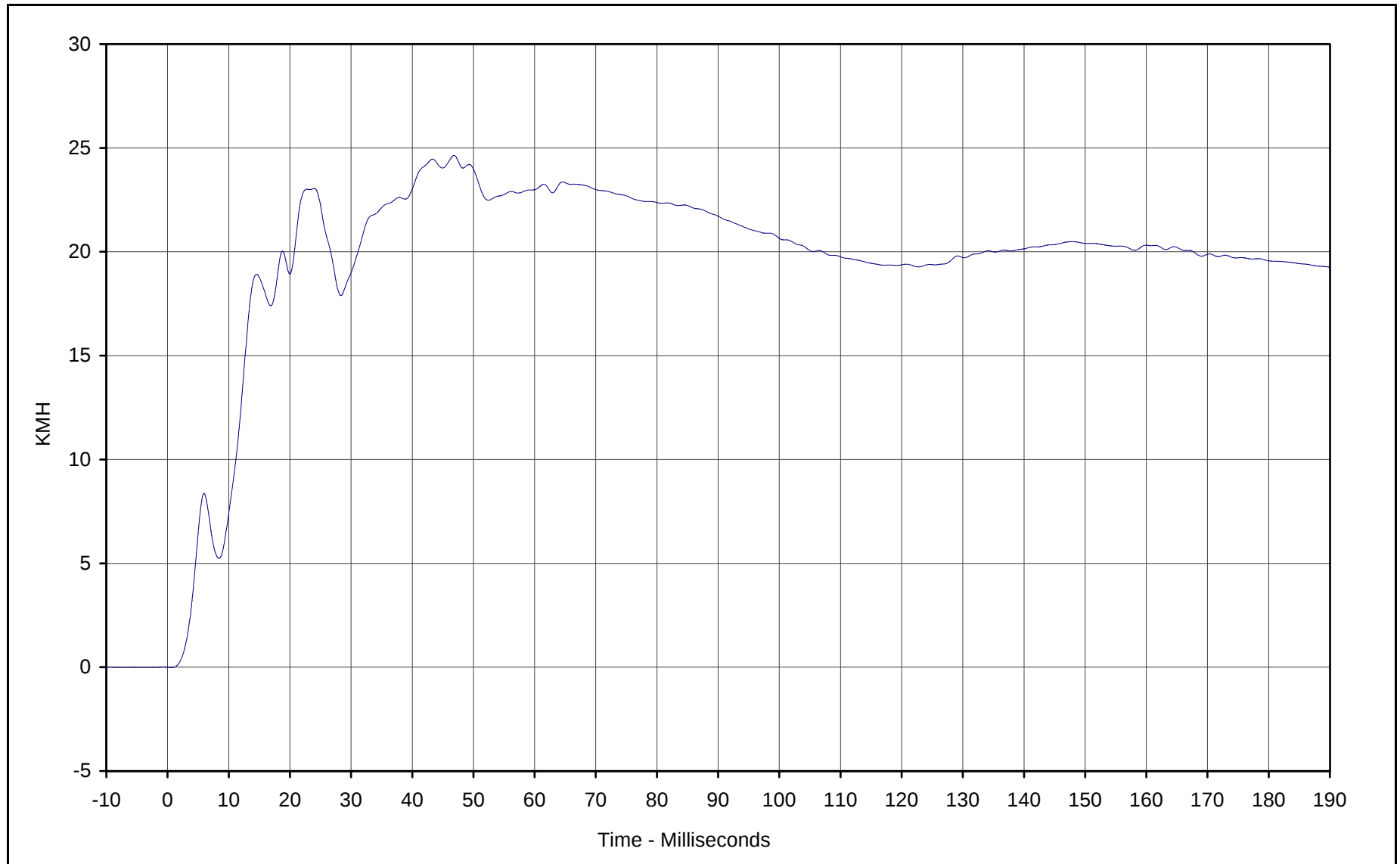




Curve Description: Left Sill at Front Door Y
Maximum Value: 74.6 at 11.9 Milliseconds
Minimum Value: -31.8 at 26.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-037

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

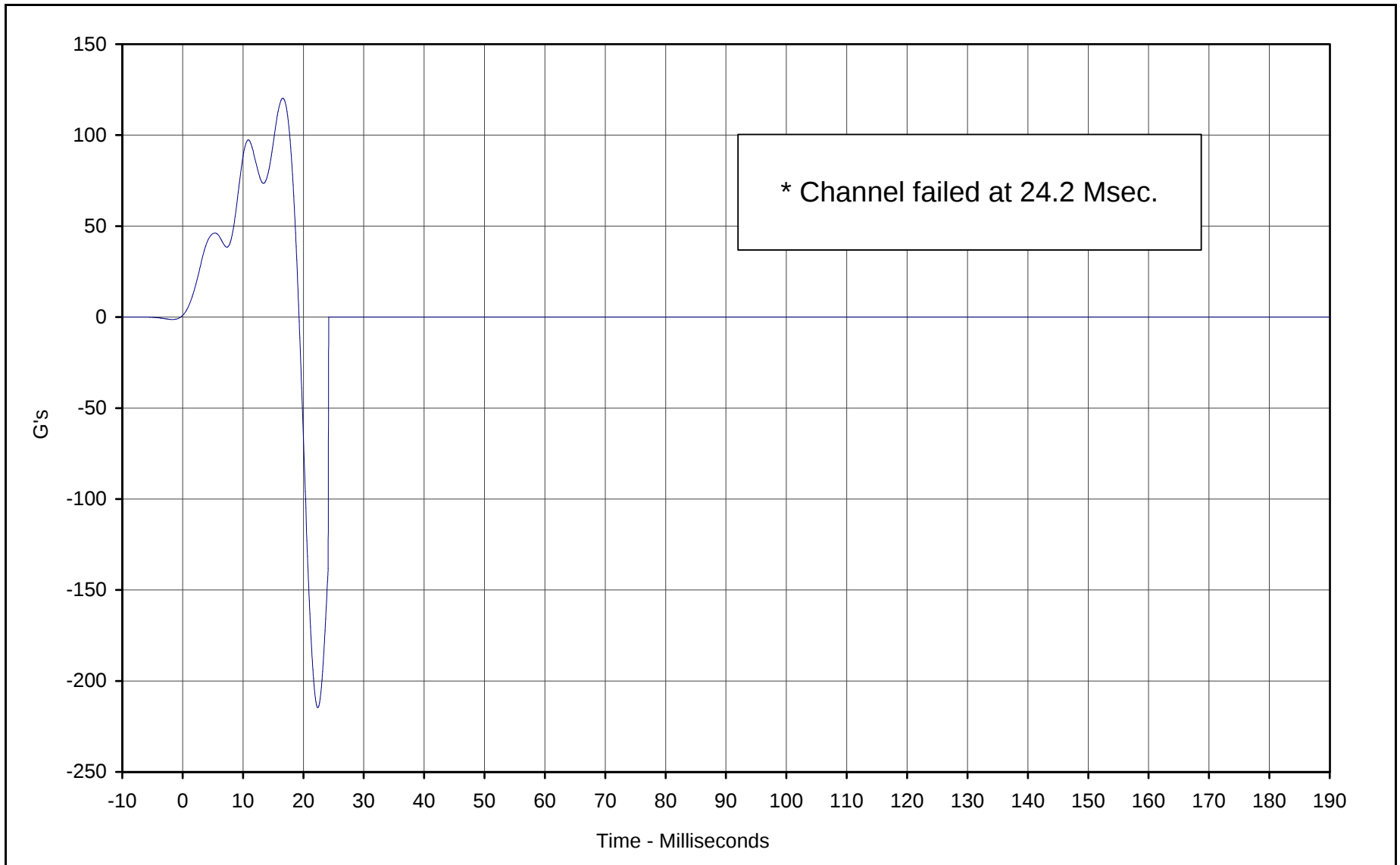




Curve Description: Left Sill at Front Door Y Velocity
Maximum Value: 24.6 at 46.8 Milliseconds
Minimum Value: 0.0 at 0.6 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-037

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Left Front Door Centerline Y *

Maximum Value: 120.3 at 16.6 Milliseconds

Minimum Value: -214.7 at 22.4 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/01

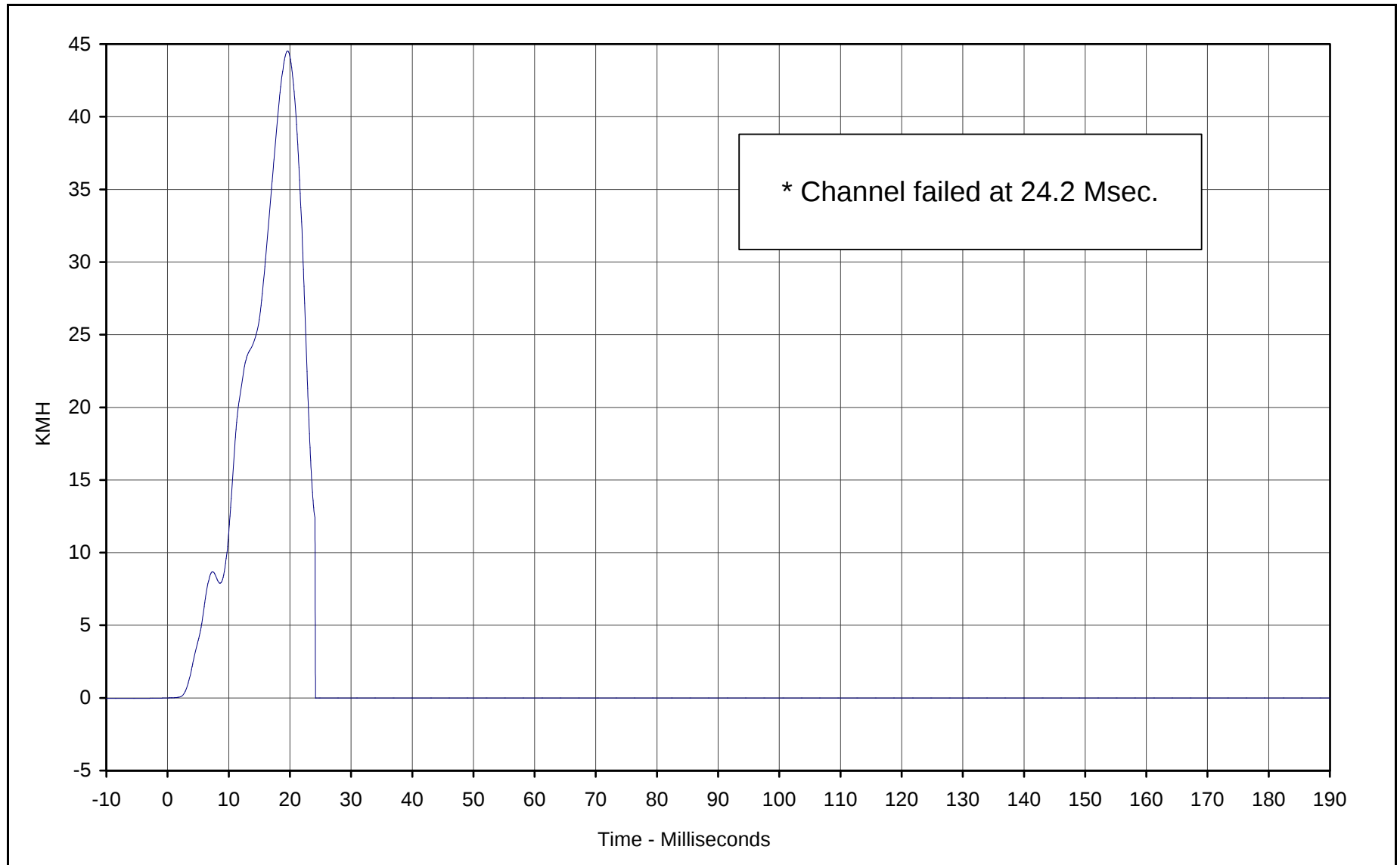
Curve Number: FIL-038

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 24.2 Msec.





Curve Description: Left Front Door CL Y Velocity *

Maximum Value: 44.5 at 19.6 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 11/19/02

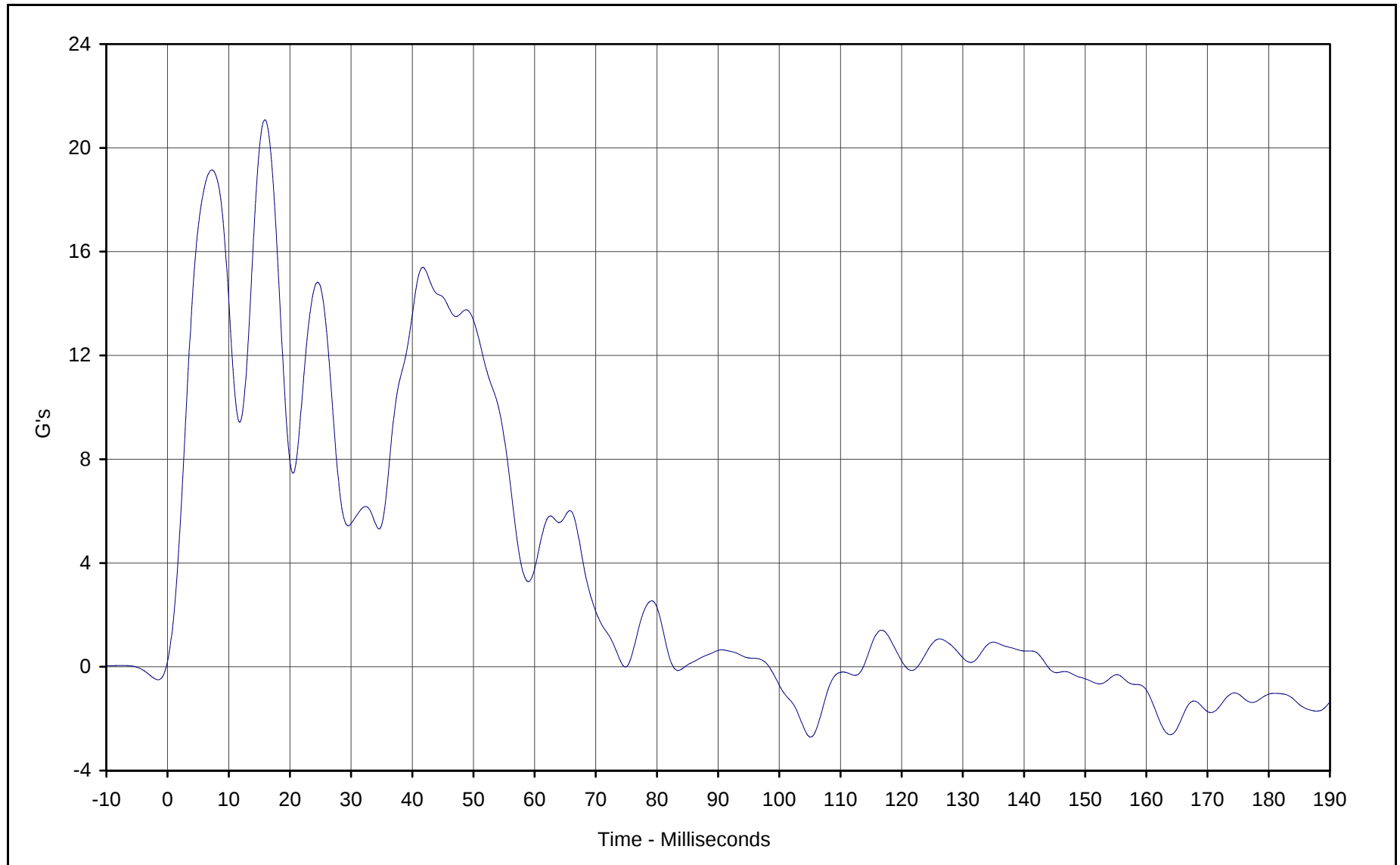
Curve Number: IN1-038

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

* Channel failed at 24.2 Msec.

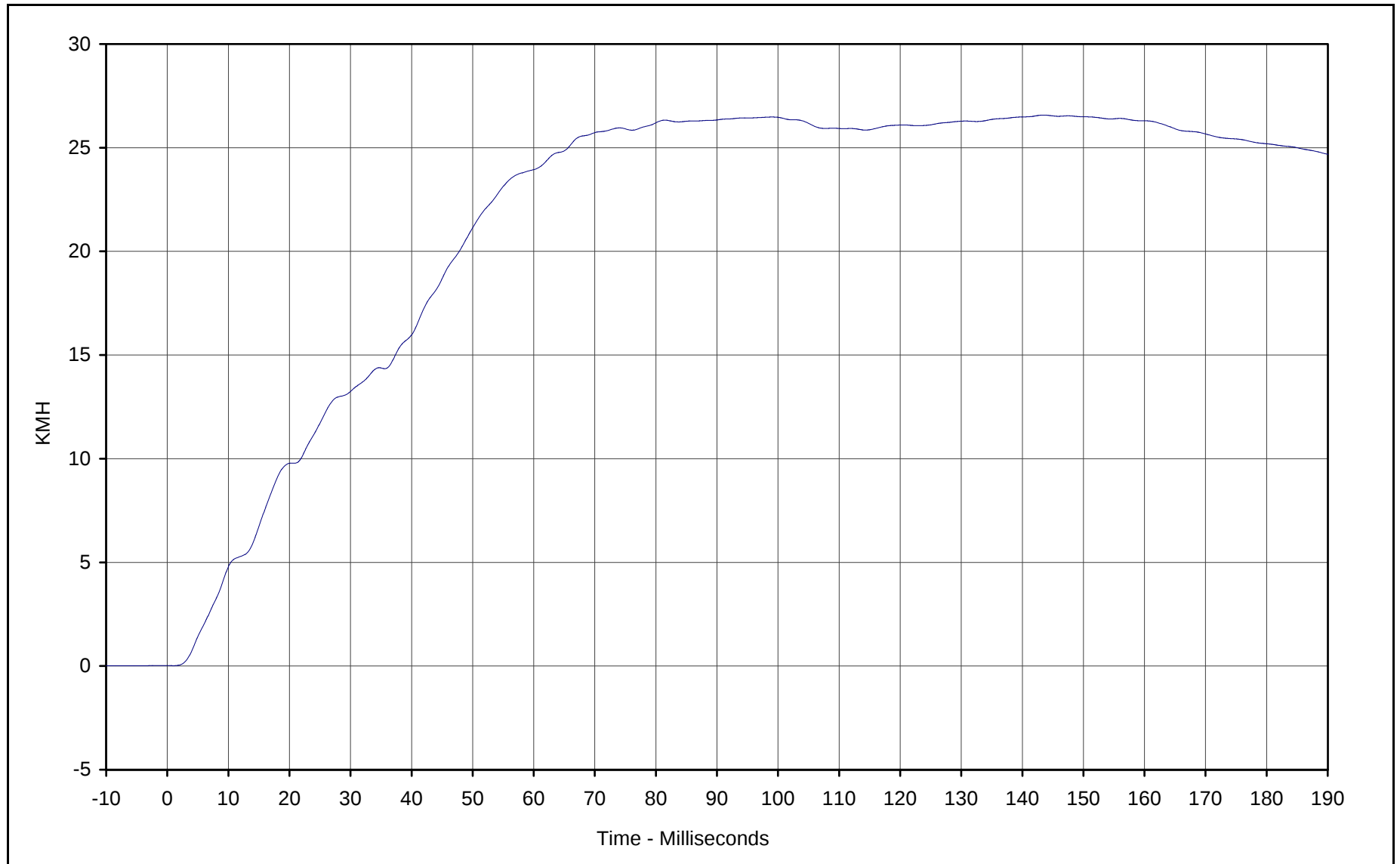




Curve Description: Right Rear Occ. Compartment Y
Maximum Value: 21.1 at 15.9 Milliseconds
Minimum Value: -2.7 at 105.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-039

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



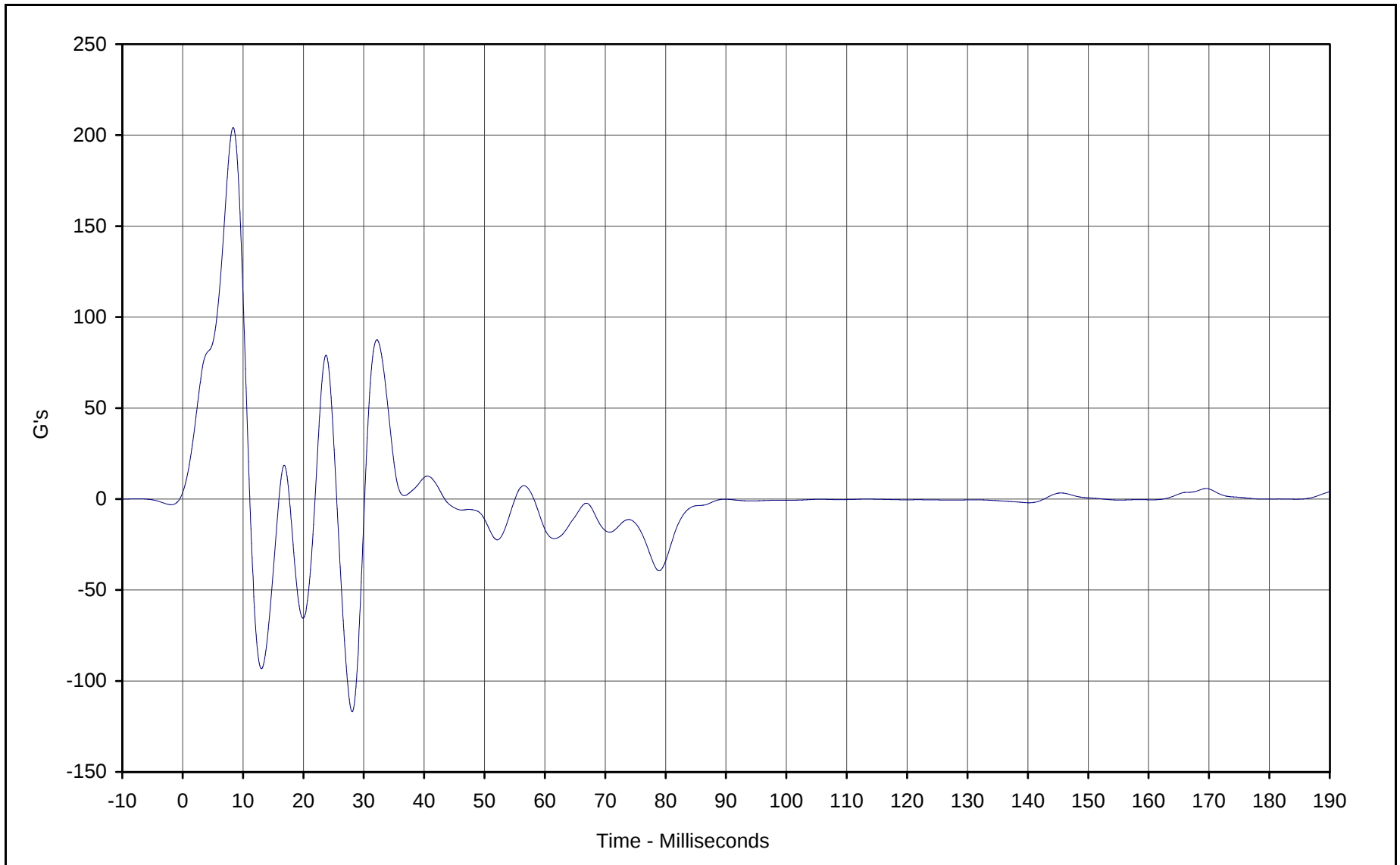


Curve Description: Right Rear Occ. Comp. Y Velocity
Maximum Value: 26.6 at 143.5 Milliseconds
Minimum Value: 0.0 at 1.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-039

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



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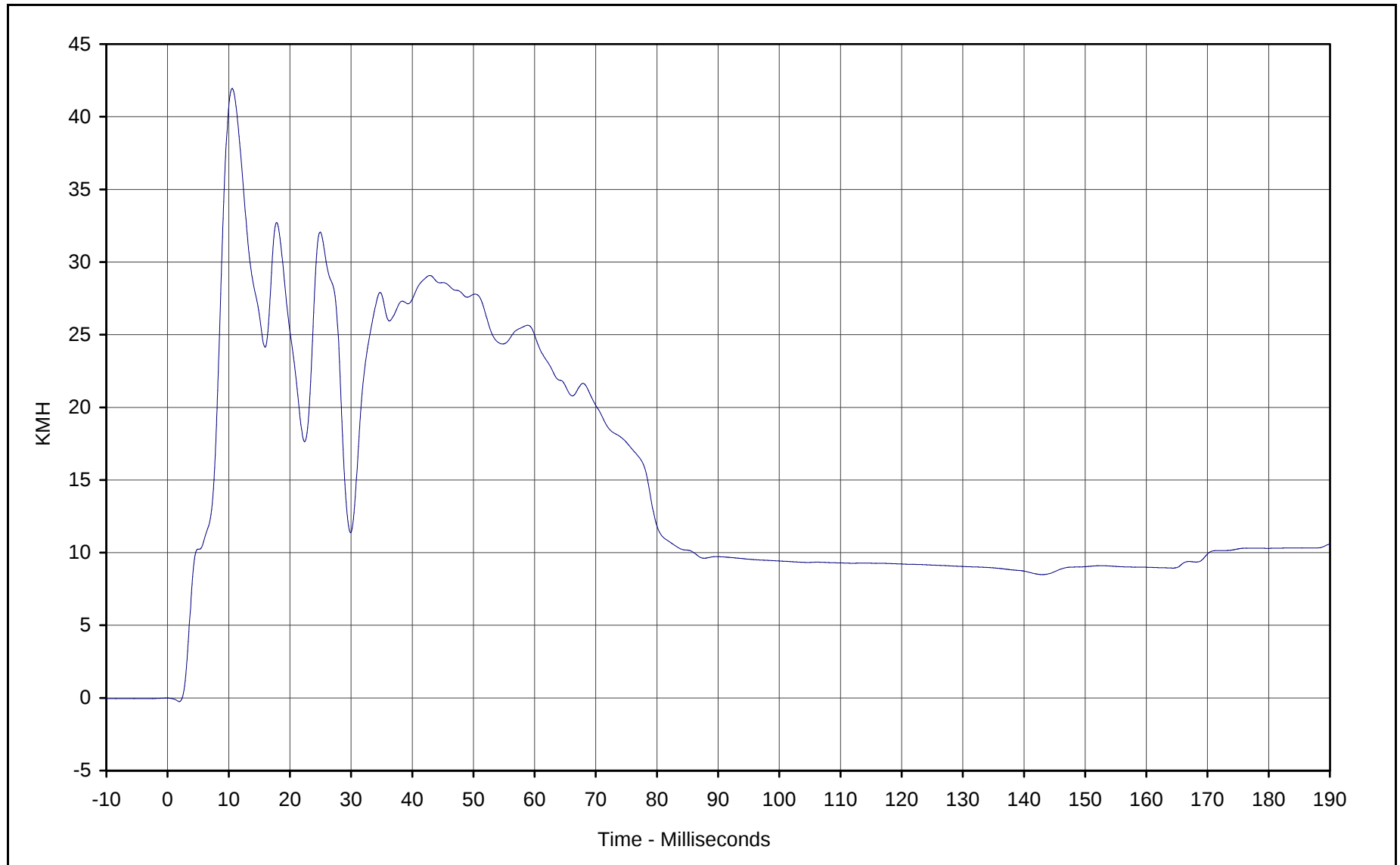


Curve Description: Left Front Door Mid Rear Y
Maximum Value: 204.2 at 8.4 Milliseconds
Minimum Value: -116.9 at 28.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-040

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



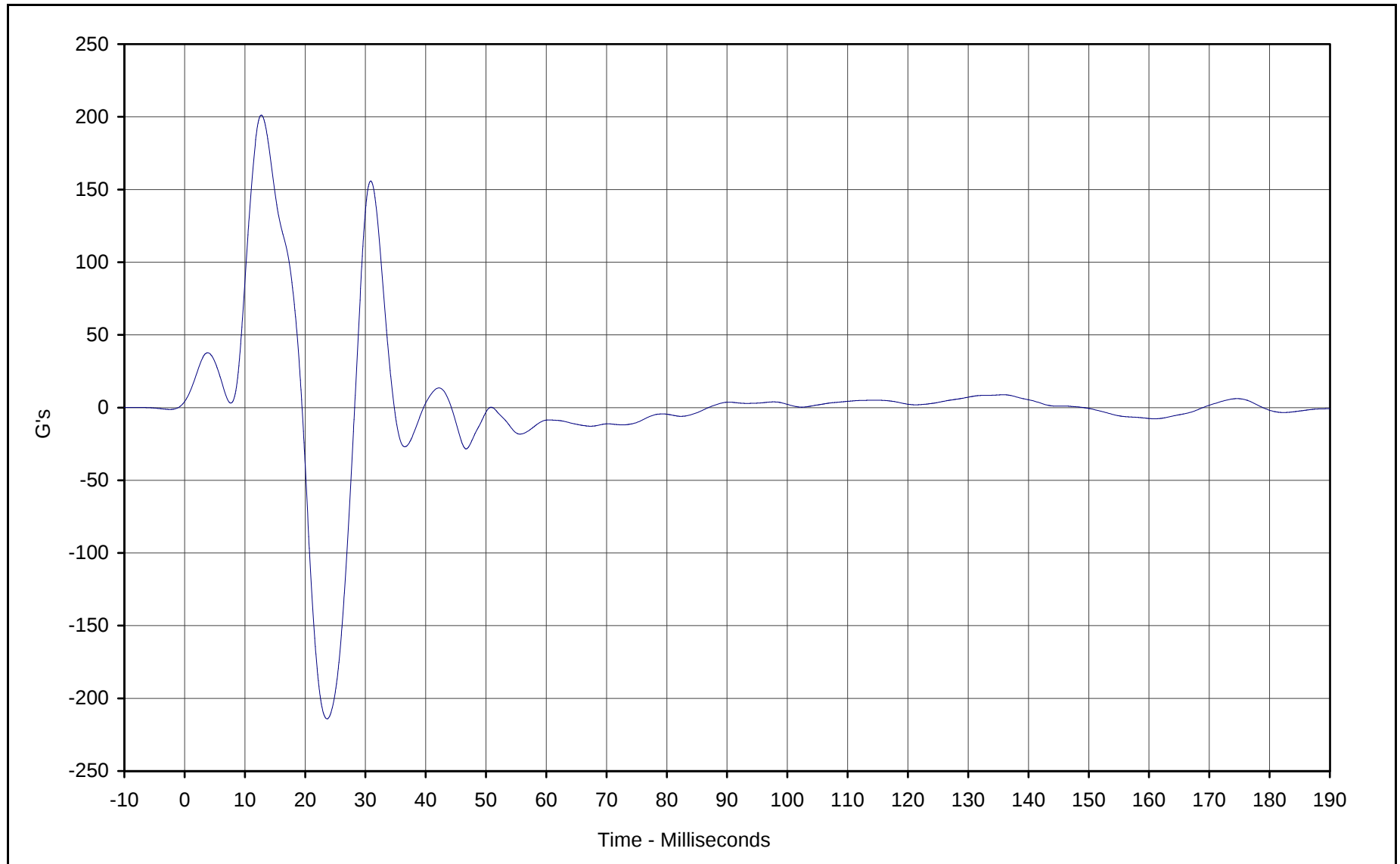
KAR21113-01



Curve Description: Left Front Door Mid Rear Y Velocity
Maximum Value: 41.9 at 10.6 Milliseconds
Minimum Value: -0.2 at 1.9 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/02
Curve Number: IN1-040

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

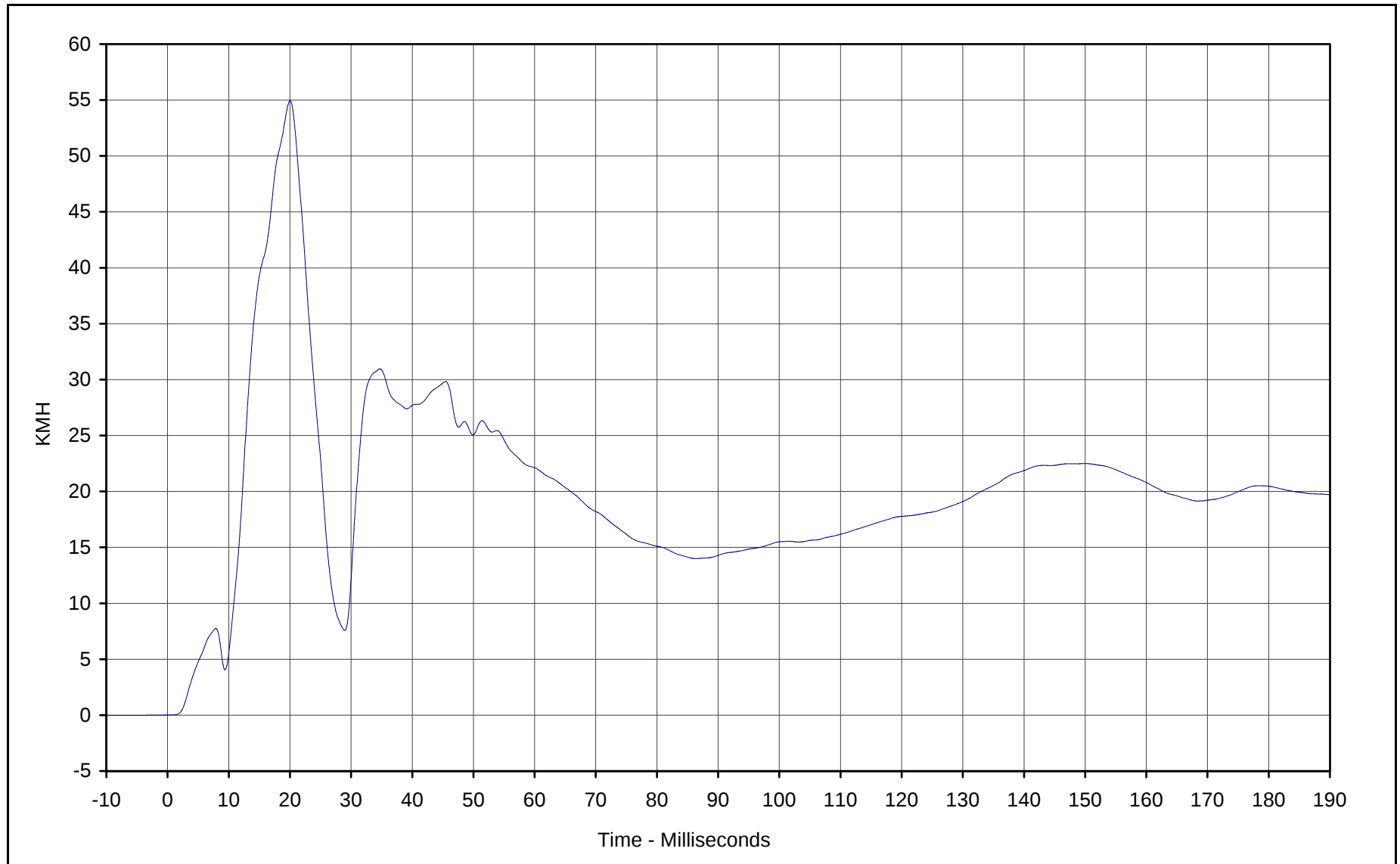




Curve Description: Left Front Door Upper CL Y
Maximum Value: 201.2 at 12.7 Milliseconds
Minimum Value: -214.1 at 23.6 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-041

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Left Front Door Upper CL Y Velocity

Maximum Value: 54.9 at 20.0 Milliseconds

Minimum Value: 0.0 at 0.6 Milliseconds

SAE Filter Class: 180

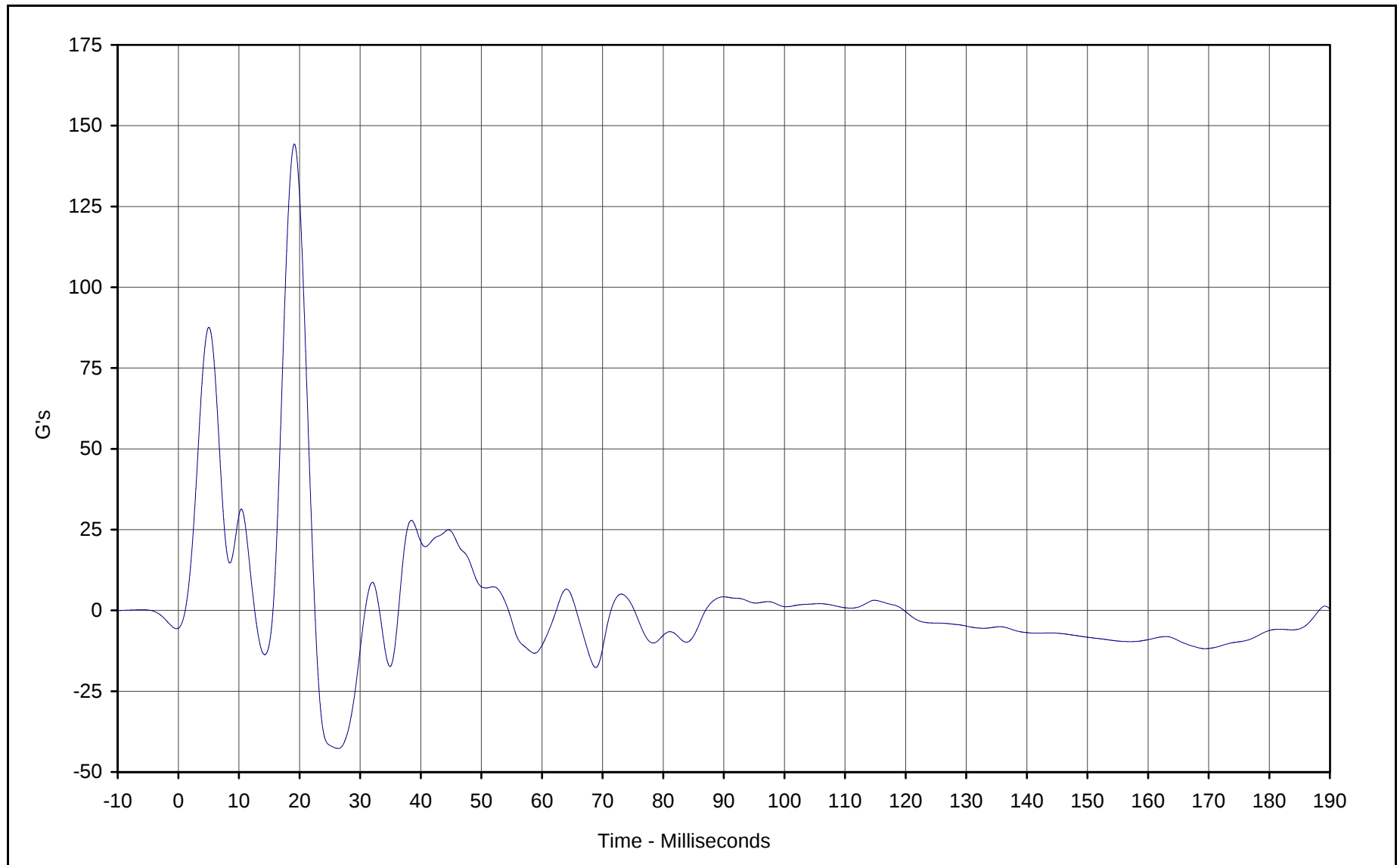
Date of Test: 11/19/02

Curve Number: IN1-041

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

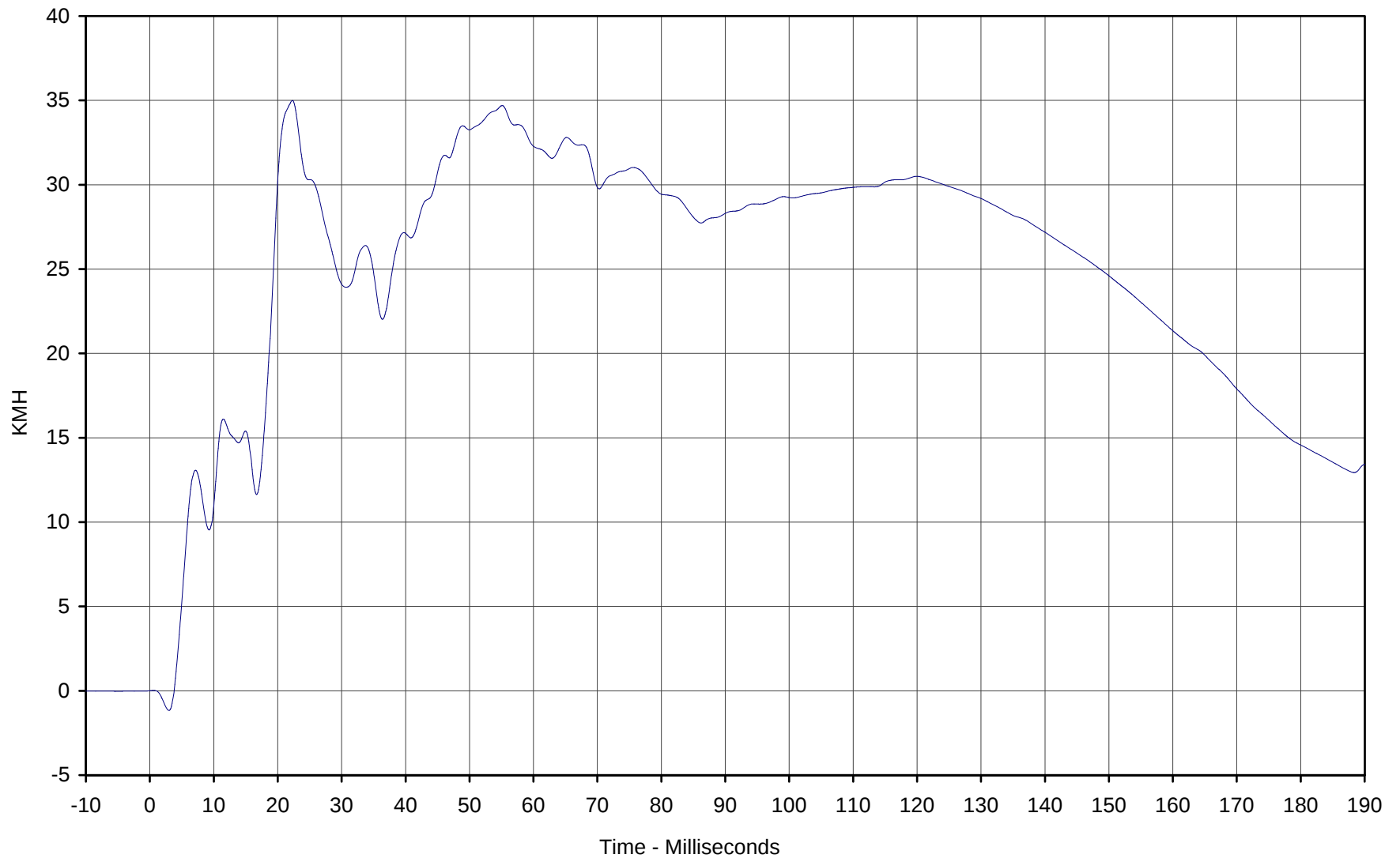




Curve Description: Left Rear Door Mid Rear Y
Maximum Value: 144.3 at 19.2 Milliseconds
Minimum Value: -42.7 at 26.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-042

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

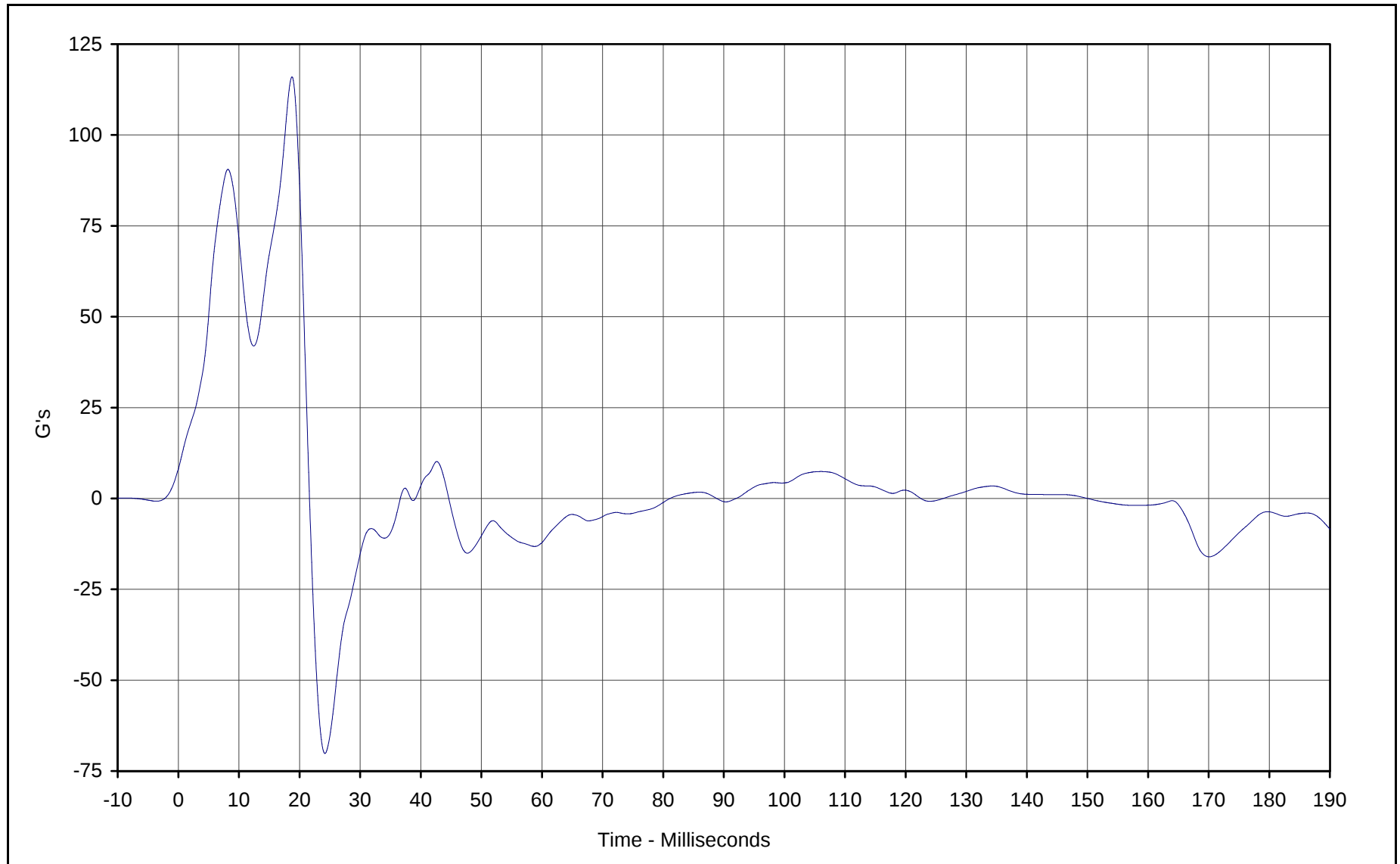




Curve Description: Left Rear Door Mid Rear Y Velocity
Maximum Value: 35.0 at 22.3 Milliseconds
Minimum Value: -1.2 at 3.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/02
Curve Number: IN1-042

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

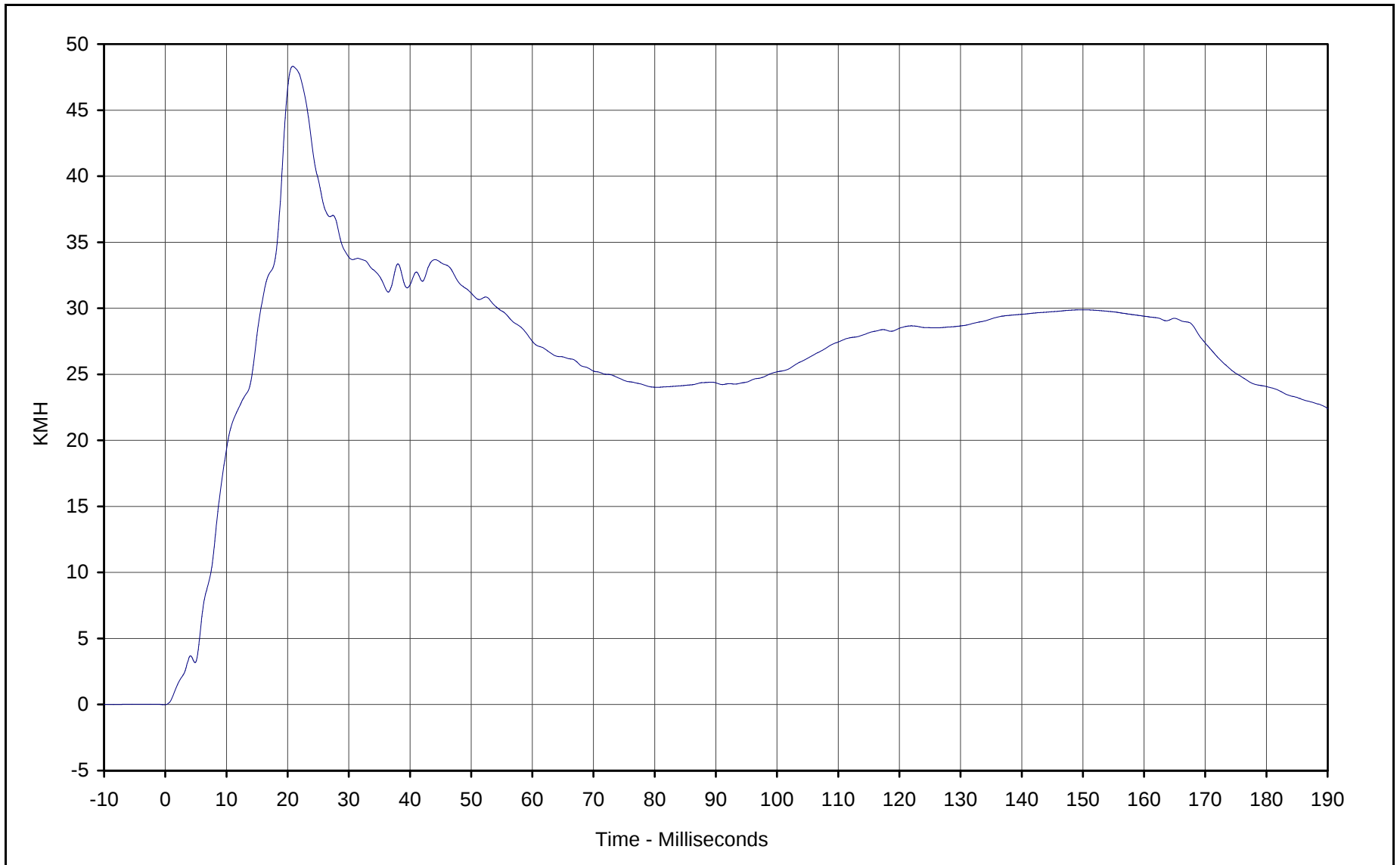




Curve Description: Left Rear Door Upper CL Y
Maximum Value: 116.0 at 18.8 Milliseconds
Minimum Value: -70.2 at 24.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-043

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

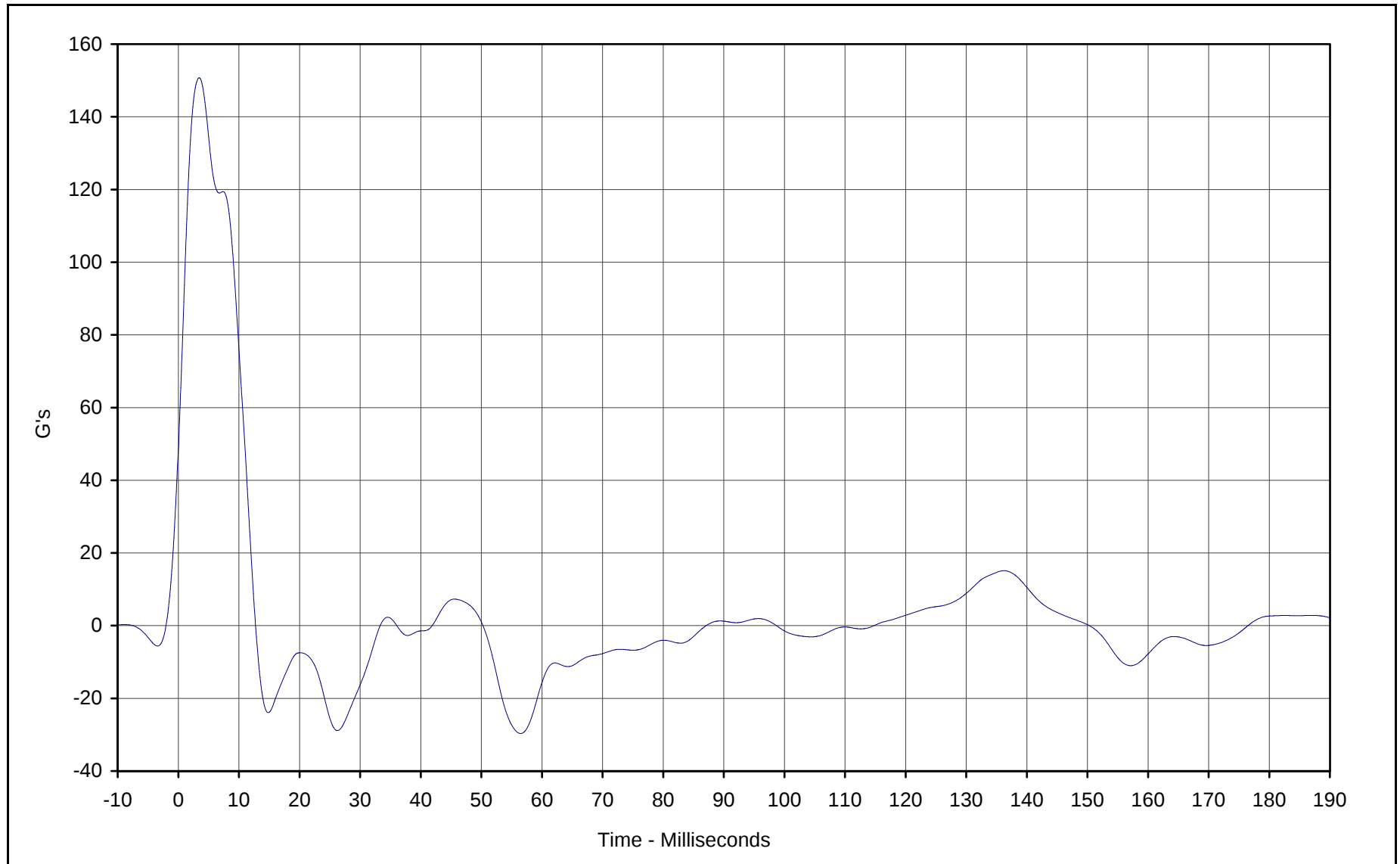




Curve Description: Left Rear Door Upper CL Y Velocity
Maximum Value: 48.3 at 20.8 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/02
Curve Number: IN1-043

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

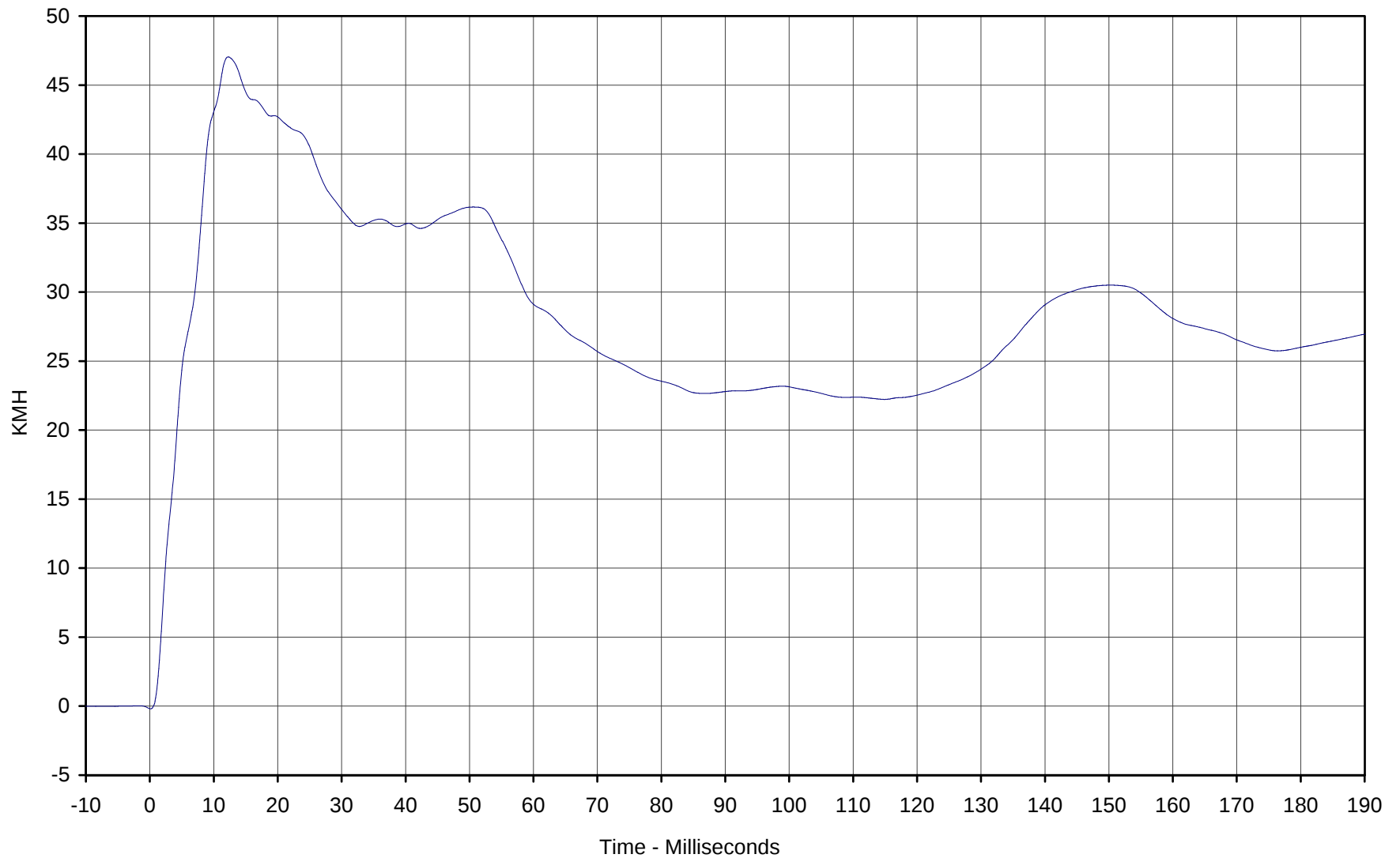




Curve Description: Left B-Post Lower Y
Maximum Value: 150.7 at 3.5 Milliseconds
Minimum Value: -29.7 at 56.5 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-044

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



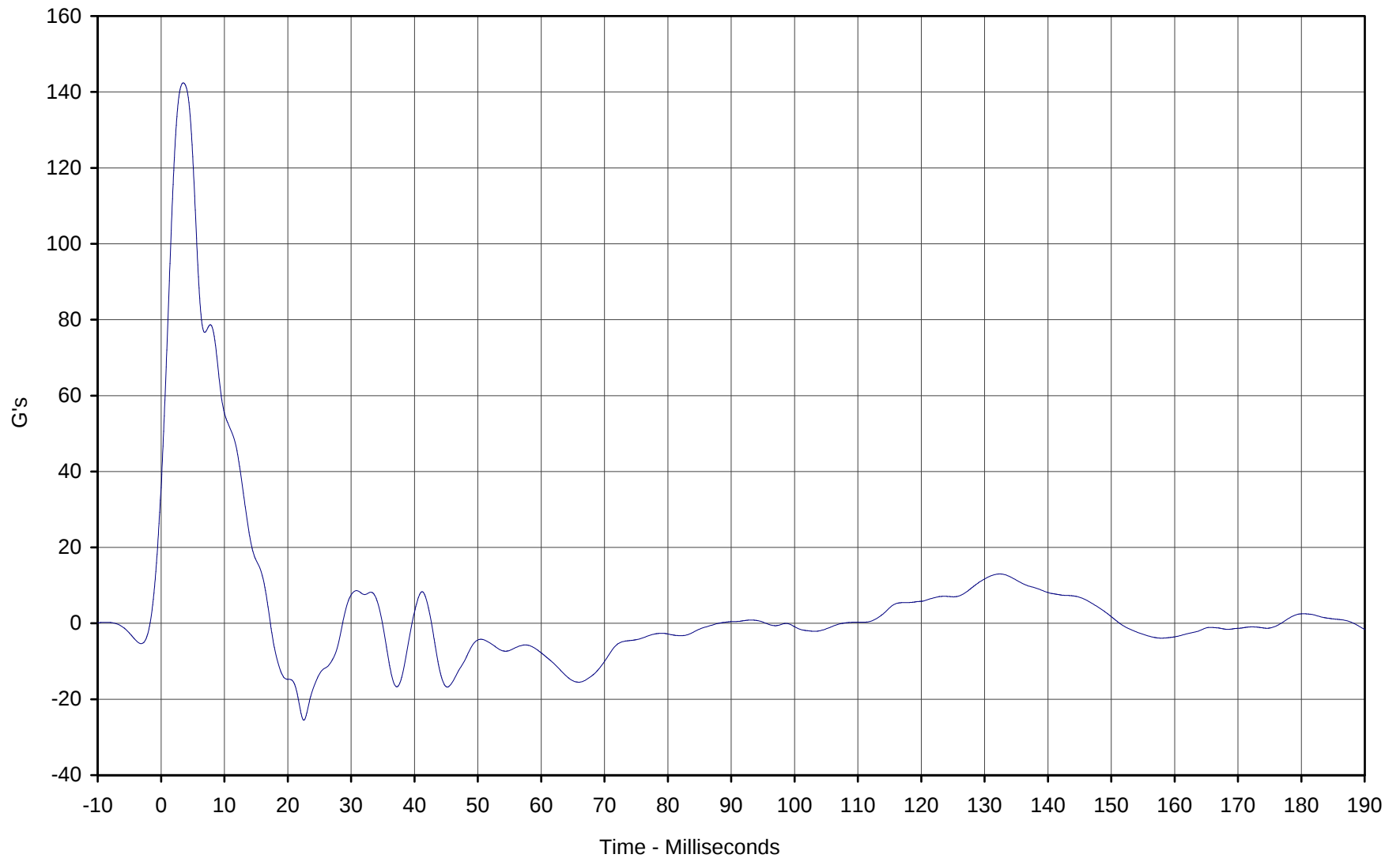


Curve Description: Left B-Post Lower Y Velocity
Maximum Value: 47.0 at 12.3 Milliseconds
Minimum Value: -0.2 at 0.1 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-044

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



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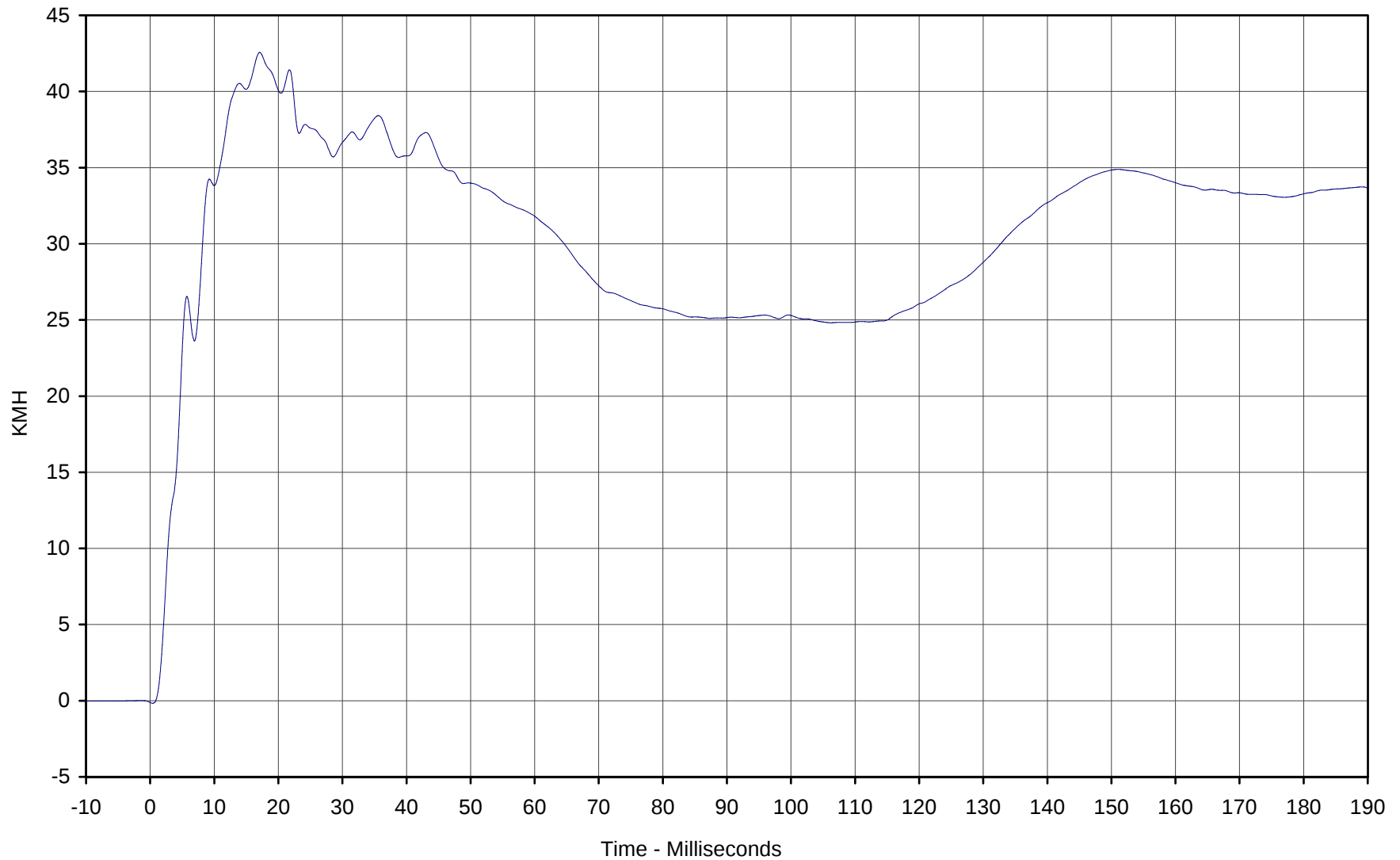
Curve Description: Left B-Post Middle Y
Maximum Value: 142.4 at 3.5 Milliseconds
Minimum Value: -25.5 at 22.5 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-045

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



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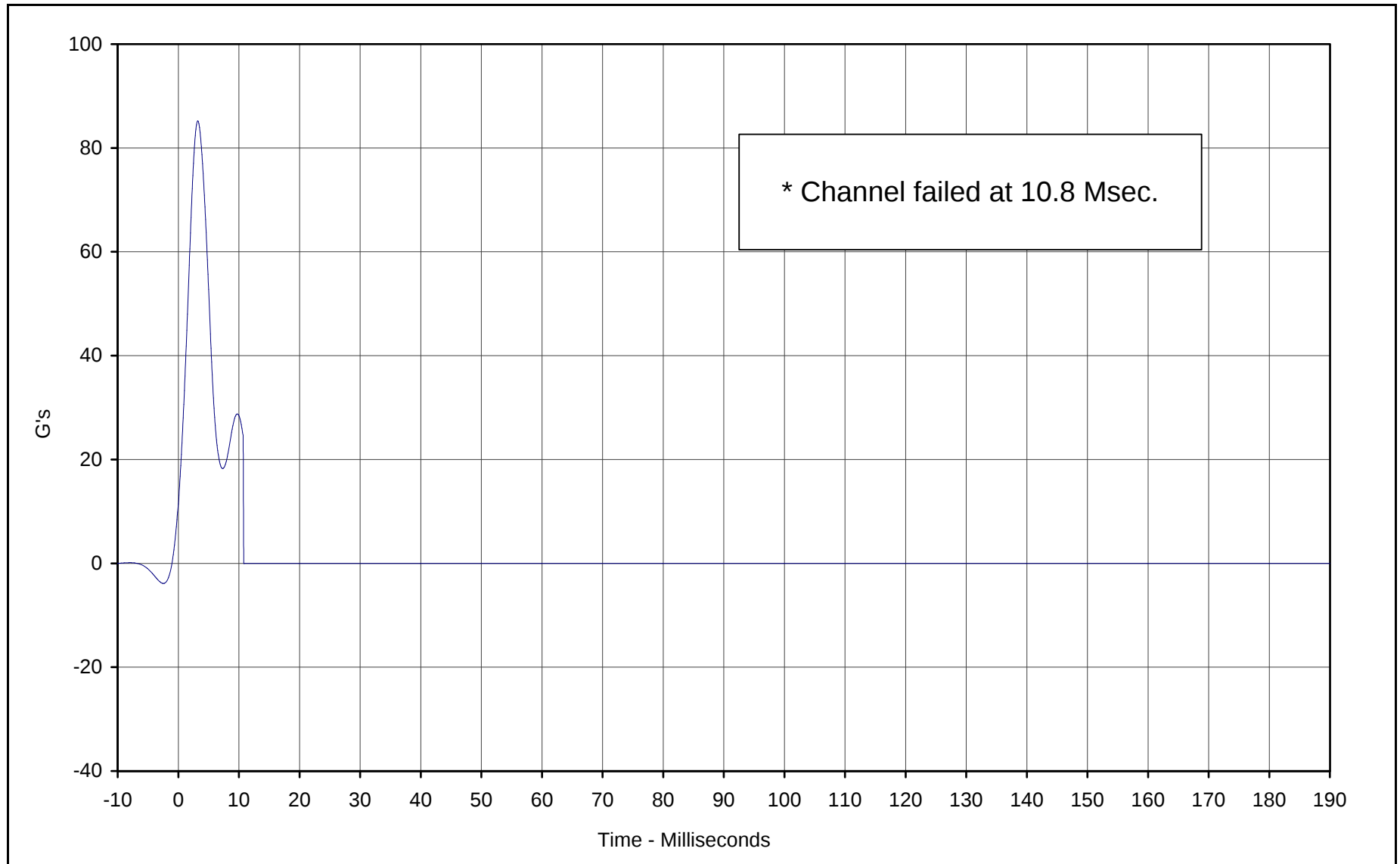


Curve Description: Left B-Post Middle Y Velocity
Maximum Value: 42.6 at 17.1 Milliseconds
Minimum Value: -0.2 at 0.4 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-045

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



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Curve Description: Left A-Post Lower Y *

Maximum Value: 85.2 at 3.2 Milliseconds

Minimum Value: 0.0 at 10.8 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/01

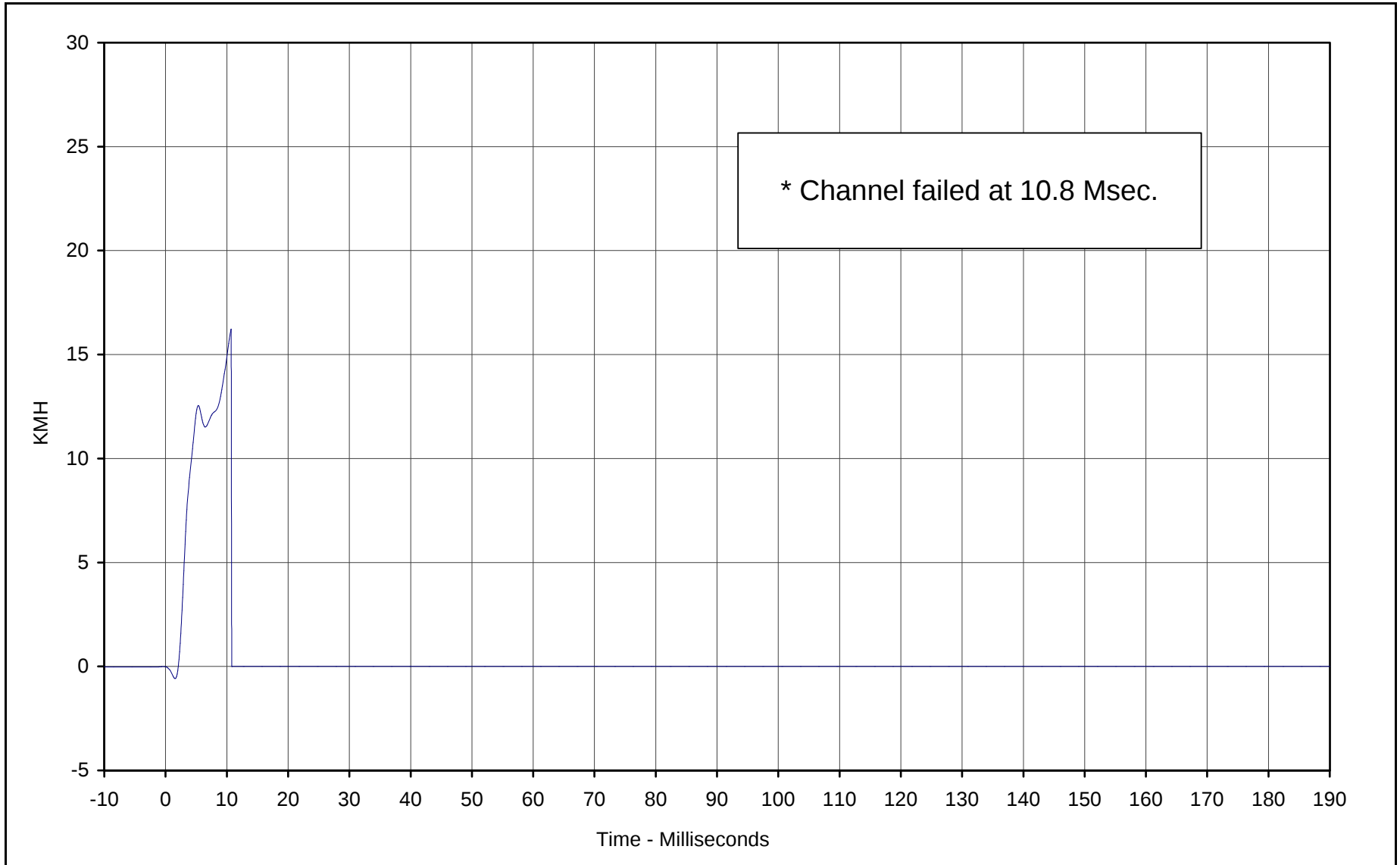
Curve Number: FIL-046

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

Channel failed at 10.8 Msec.





Curve Description: Left A-Post Lower Y Velocity *

Maximum Value: 16.2 at 10.7 Milliseconds

Minimum Value: -0.6 at 1.6 Milliseconds

SAE Filter Class: 180

Date of Test: 11/19/01

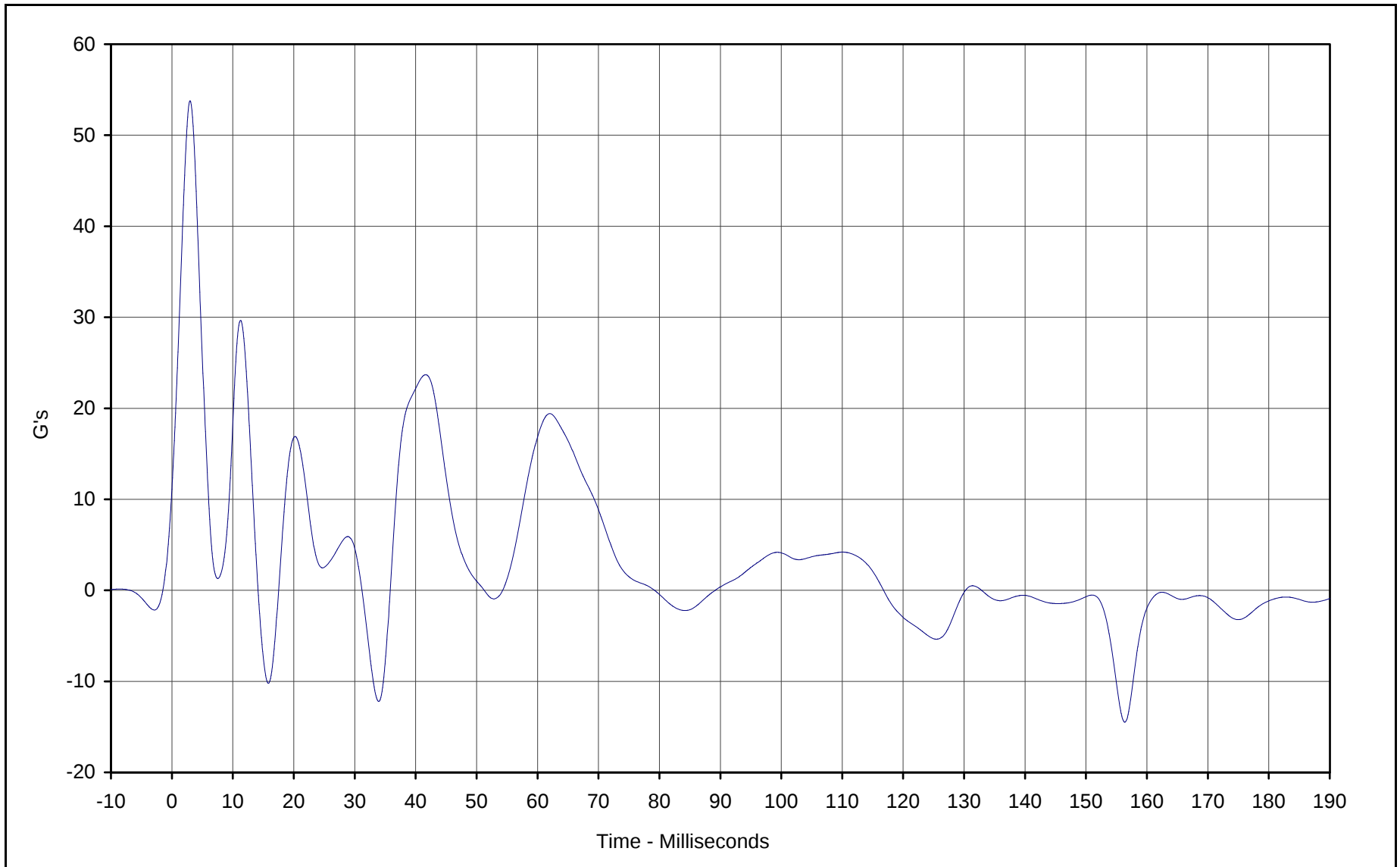
Curve Number: IN1-046

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

Channel failed at 10.8 Msec.

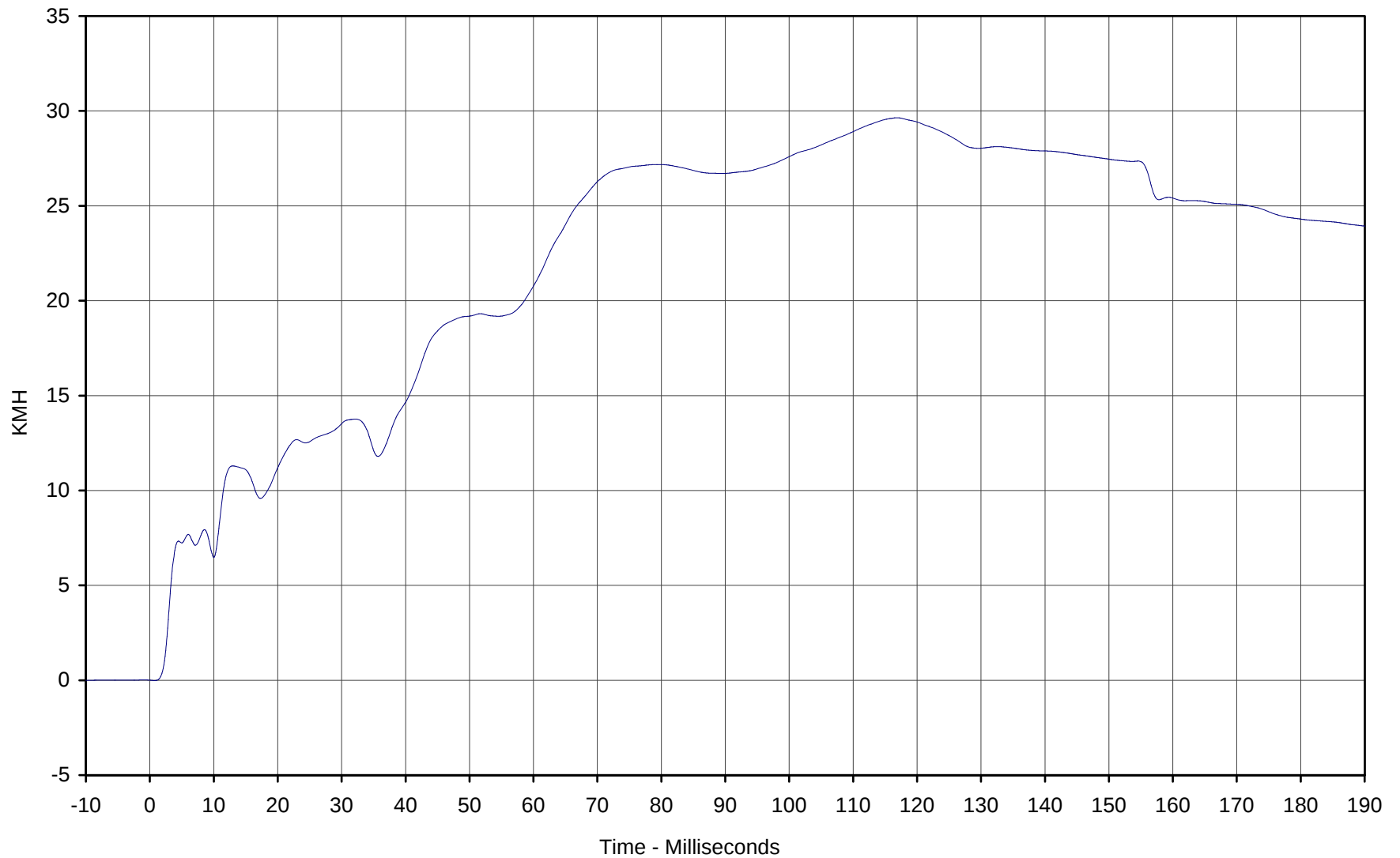




Curve Description: Left A-Post Middle Y
Maximum Value: 53.8 at 3.0 Milliseconds
Minimum Value: -14.5 at 156.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-047

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

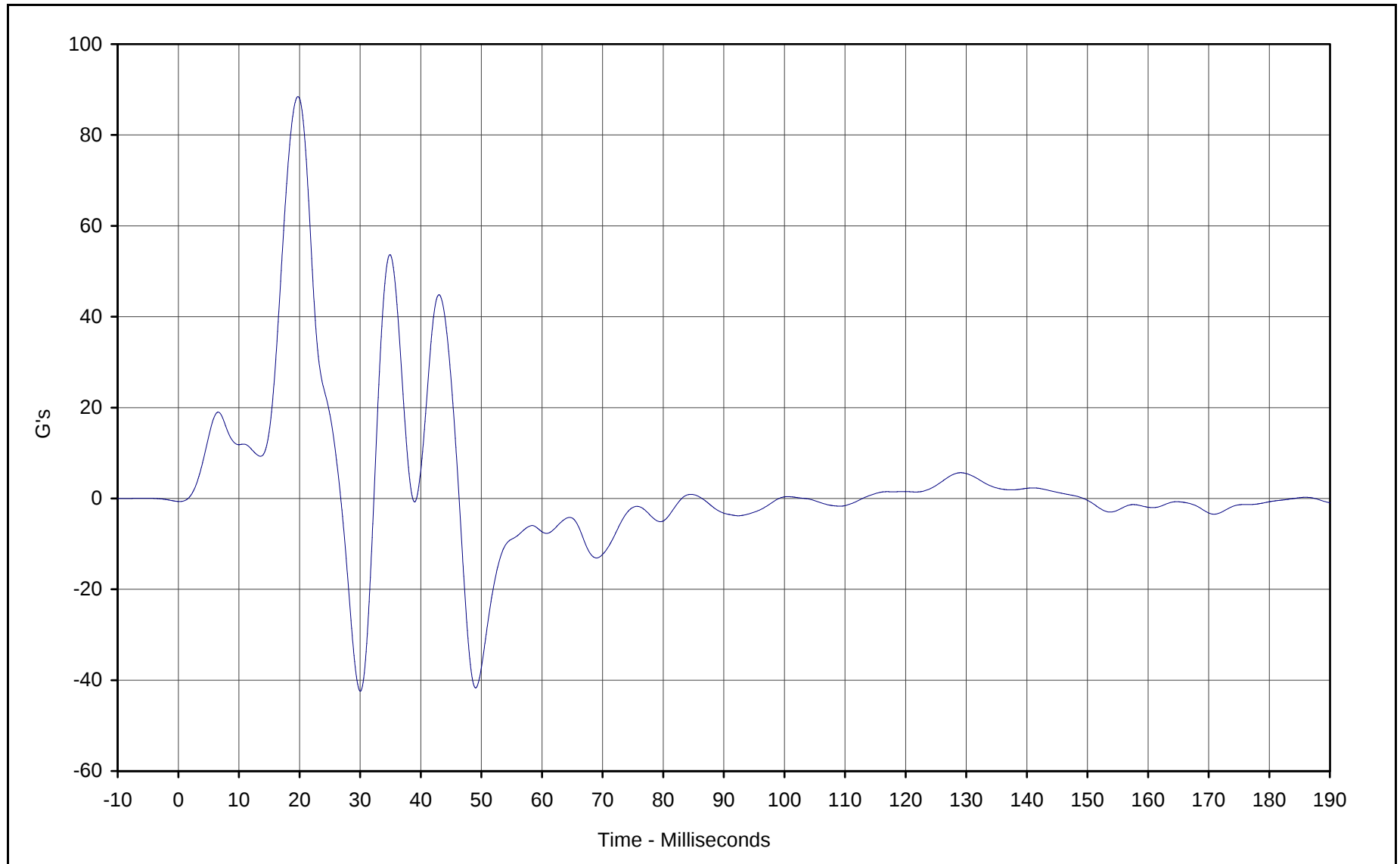




Curve Description: Left A-Post Middle Y Velocity
Maximum Value: 29.6 at 116.9 Milliseconds
Minimum Value: 0.0 at 0.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-047

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

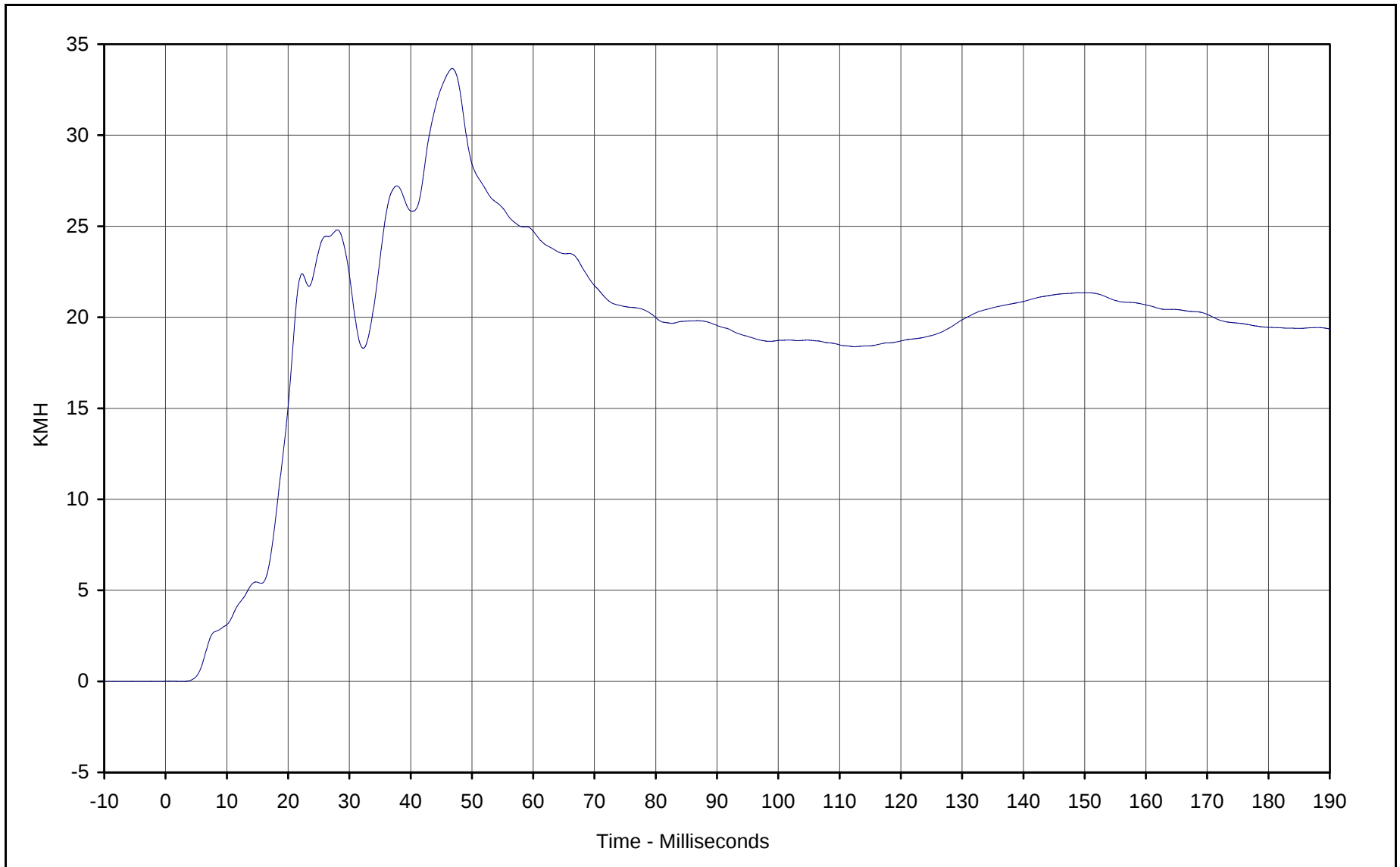




Curve Description: Left Front Seat Track Y
Maximum Value: 88.4 at 19.8 Milliseconds
Minimum Value: -42.4 at 30.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-048

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

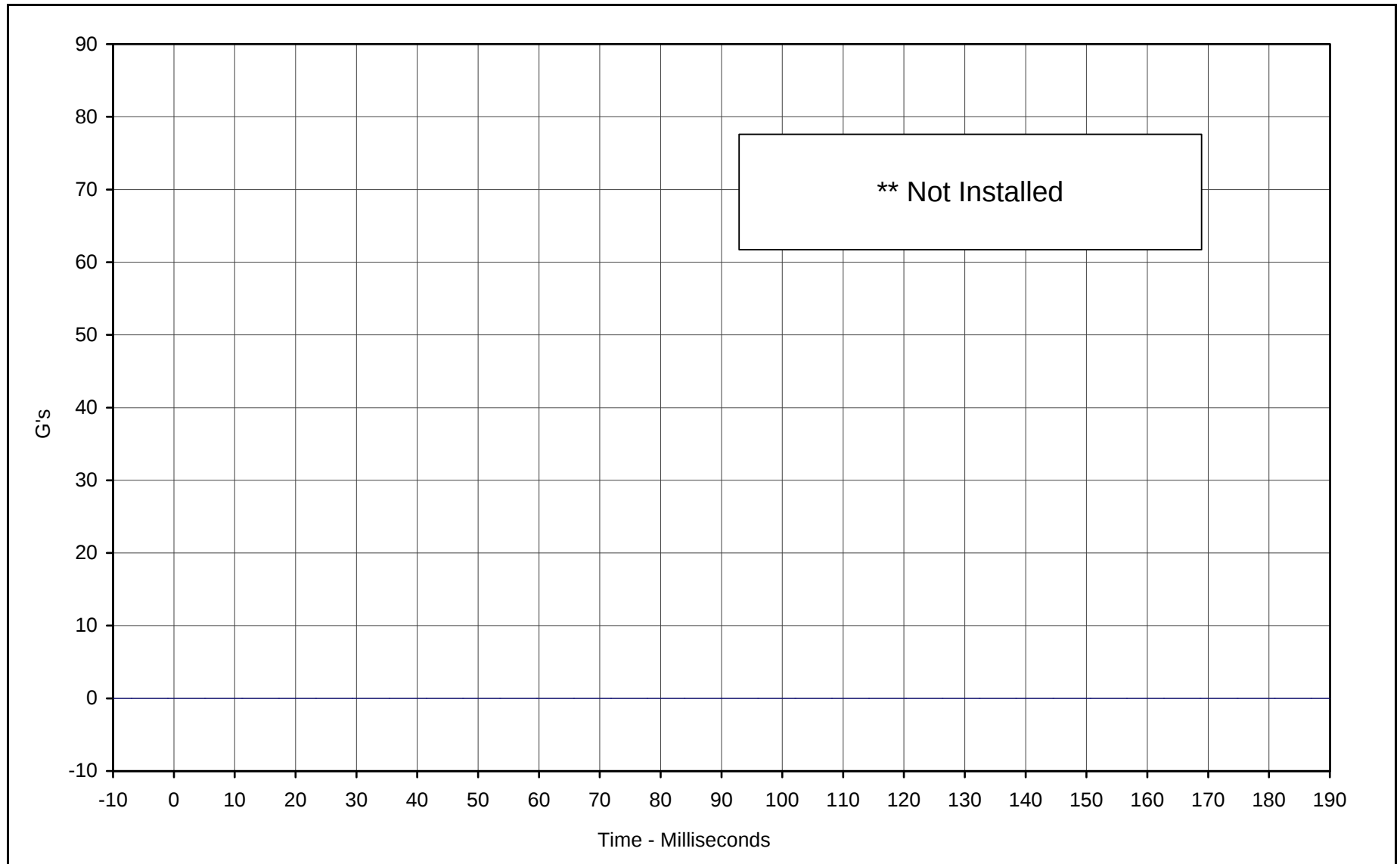




Curve Description: Left Front Seat Track Y Velocity
Maximum Value: 33.7 at 46.8 Milliseconds
Minimum Value: 0.0 at 2.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-048

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Left Rear Seat Structure Y **

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 11/19/01

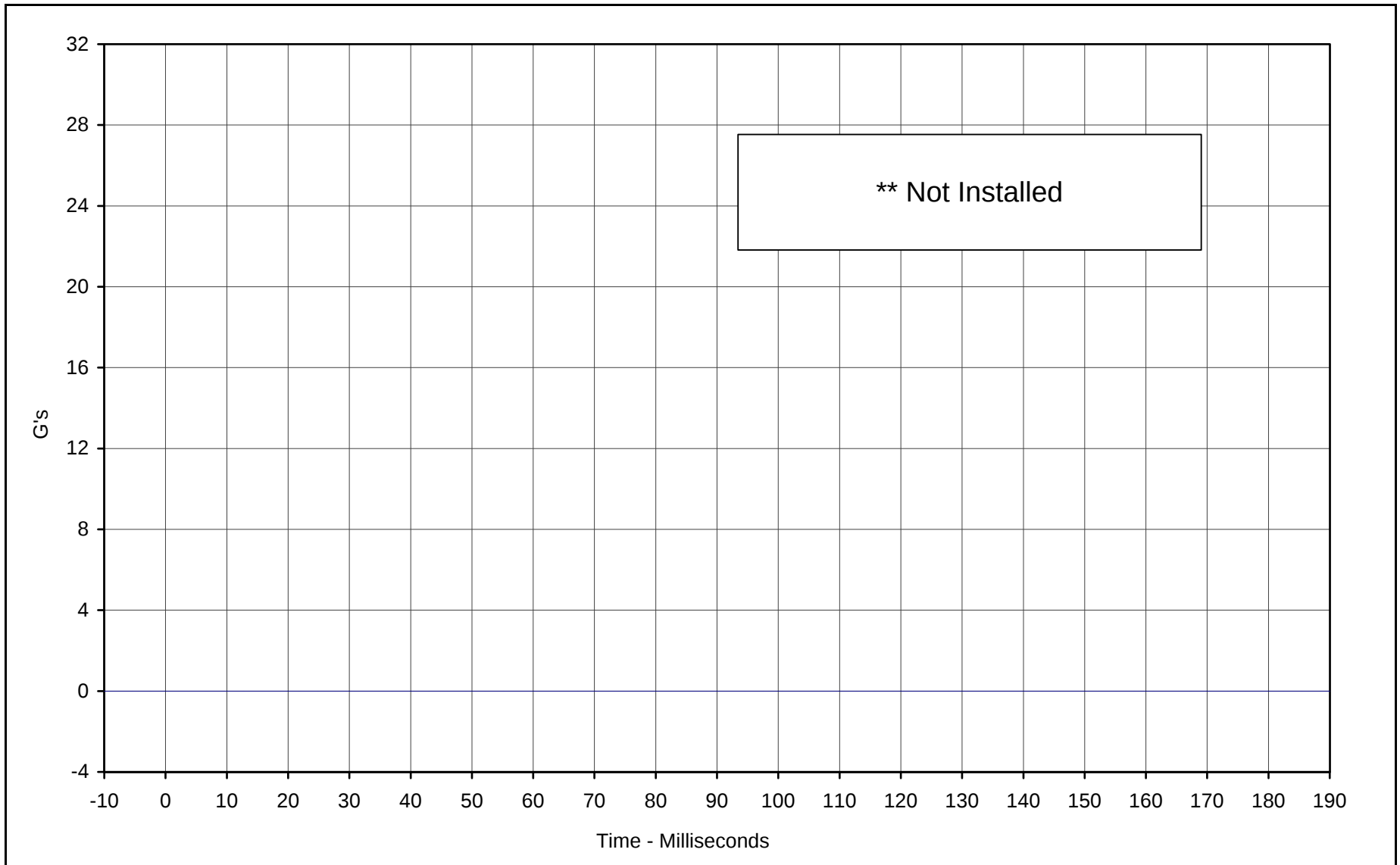
Curve Number: FIL-049

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

** Not Installed





Curve Description: Left Rear Seat Structure Y Velocity **

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 11/19/01

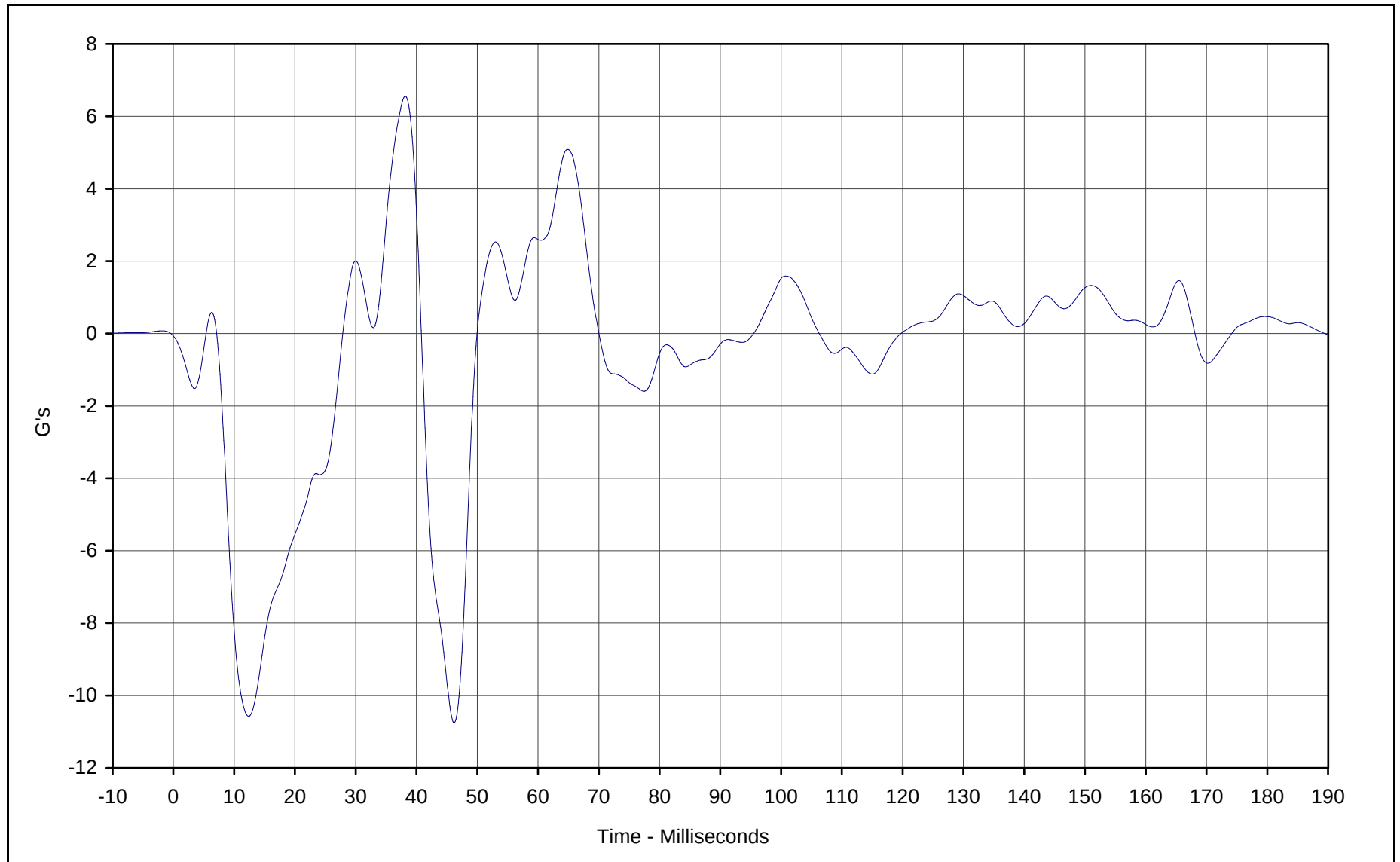
Curve Number: IN1-049

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006

Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

** Not Installed

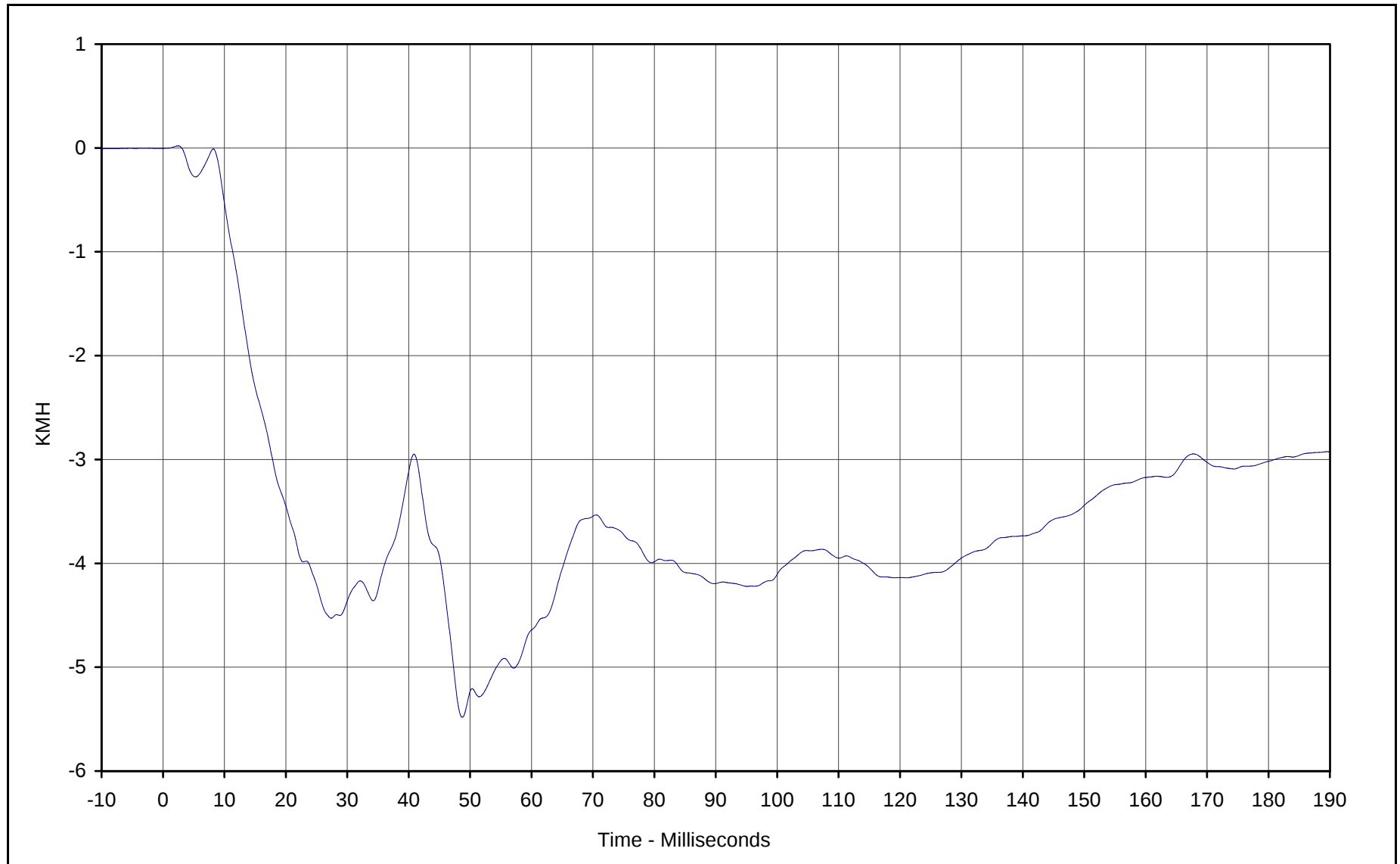




Curve Description: Vehicle CG X
Maximum Value: 6.6 at 38.2 Milliseconds
Minimum Value: -10.8 at 46.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-050

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

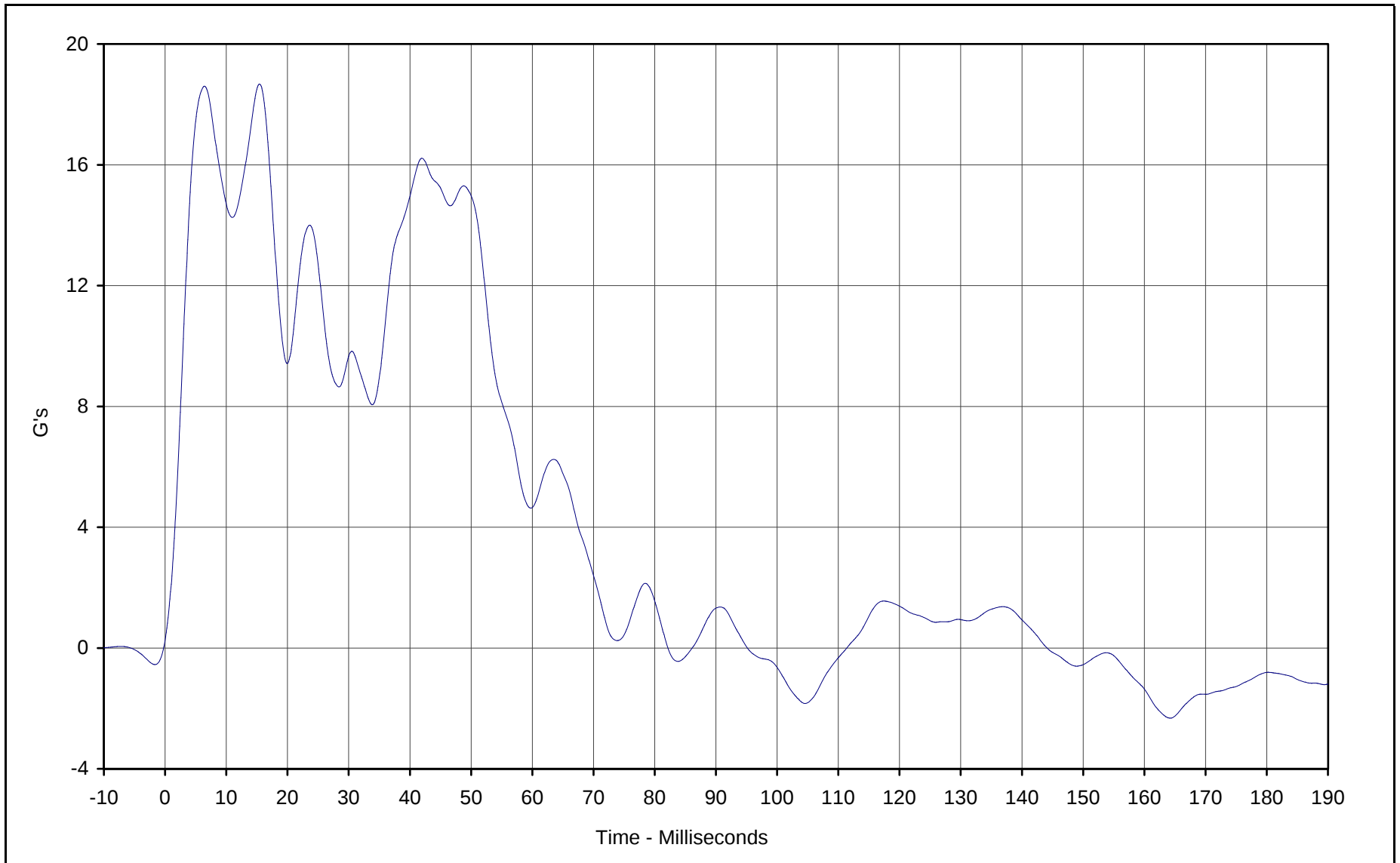




Curve Description: Vehicle CG X Velocity
Maximum Value: 0.0 at 2.5 Milliseconds
Minimum Value: -5.5 at 48.7 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-050

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

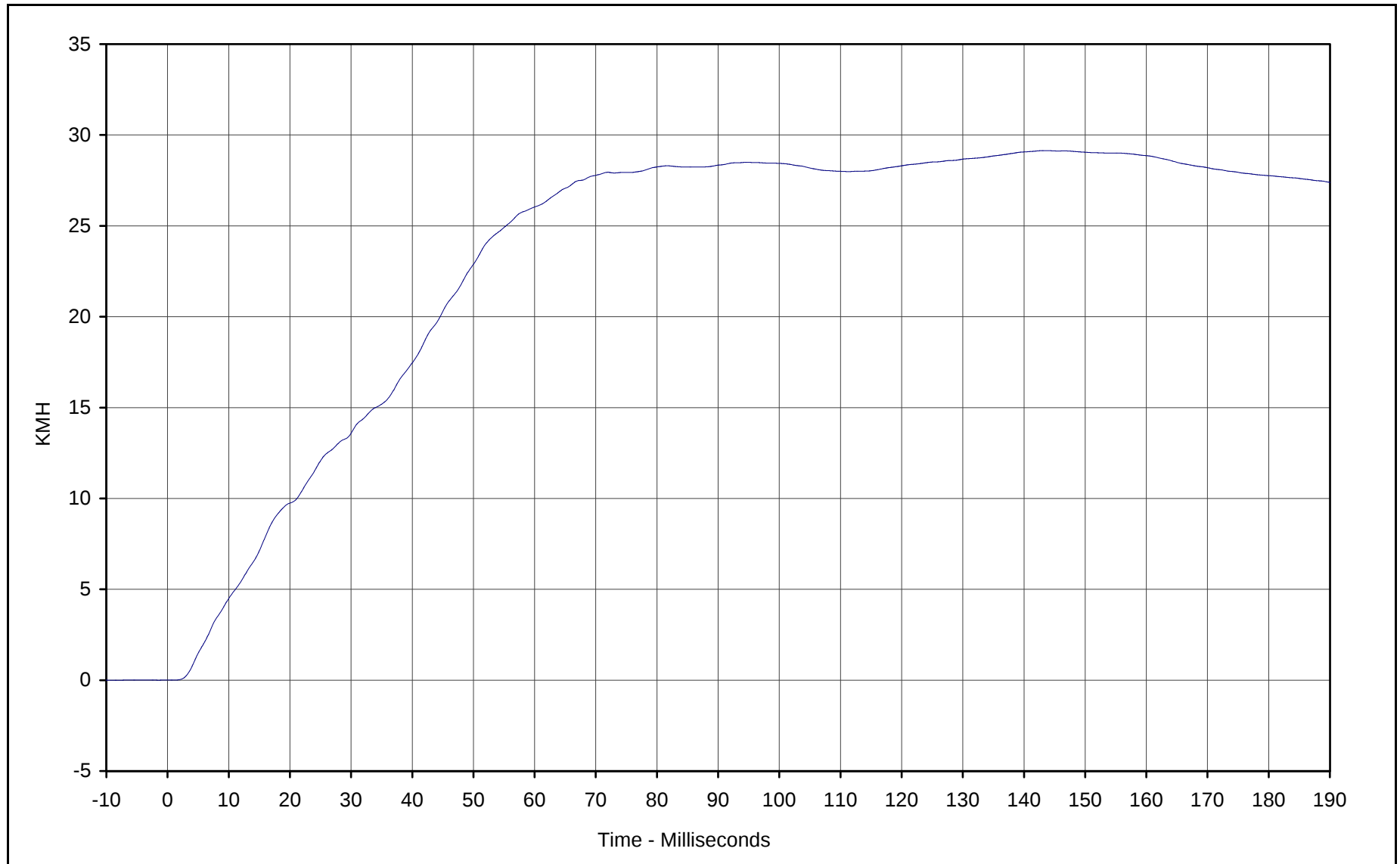




Curve Description: Vehicle CG Y
Maximum Value: 18.7 at 15.4 Milliseconds
Minimum Value: -2.3 at 164.2 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-051

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

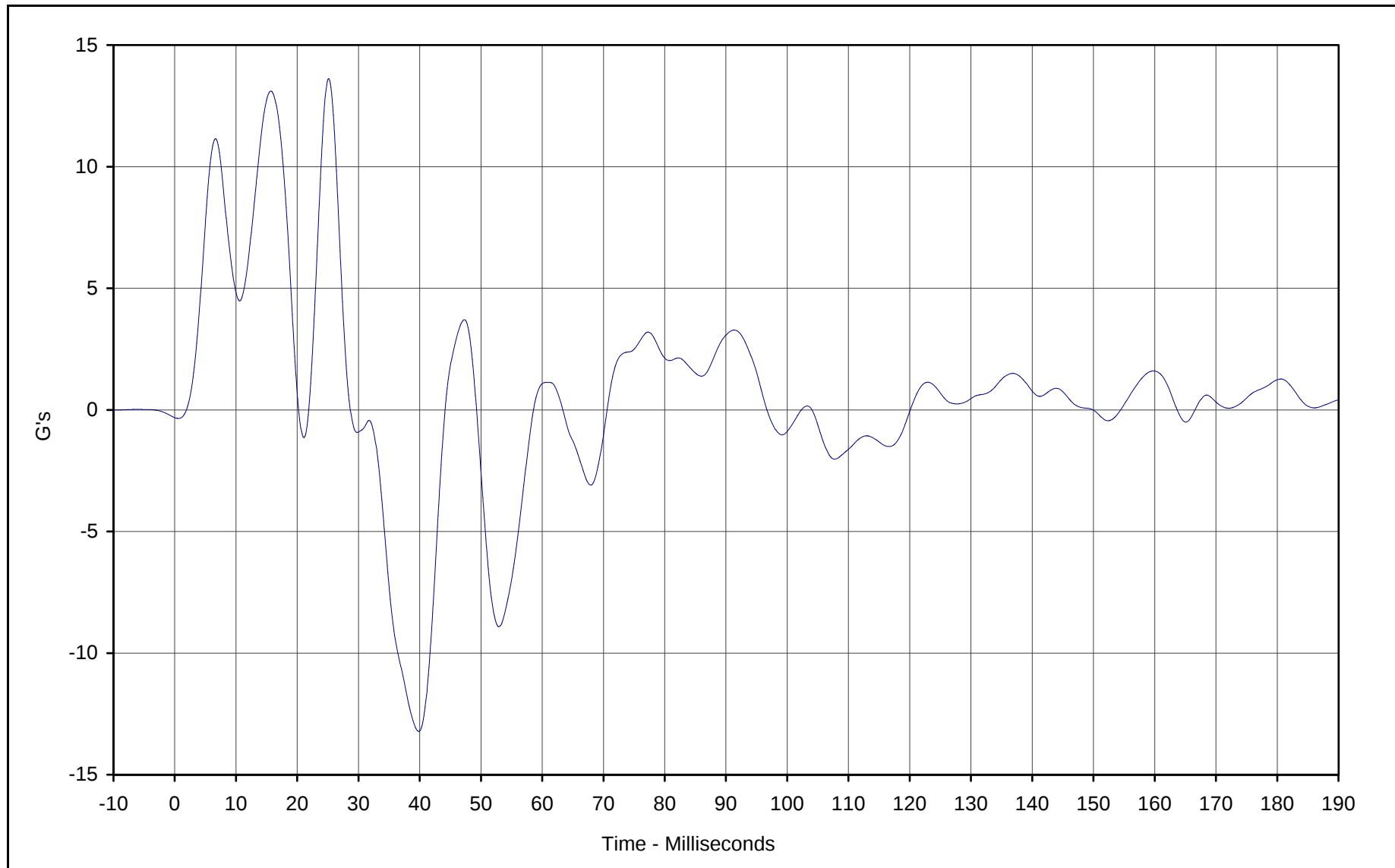




Curve Description: Vehicle CG Y Velocity
Maximum Value: 29.1 at 143.2 Milliseconds
Minimum Value: 0.0 at 1.0 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-051

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

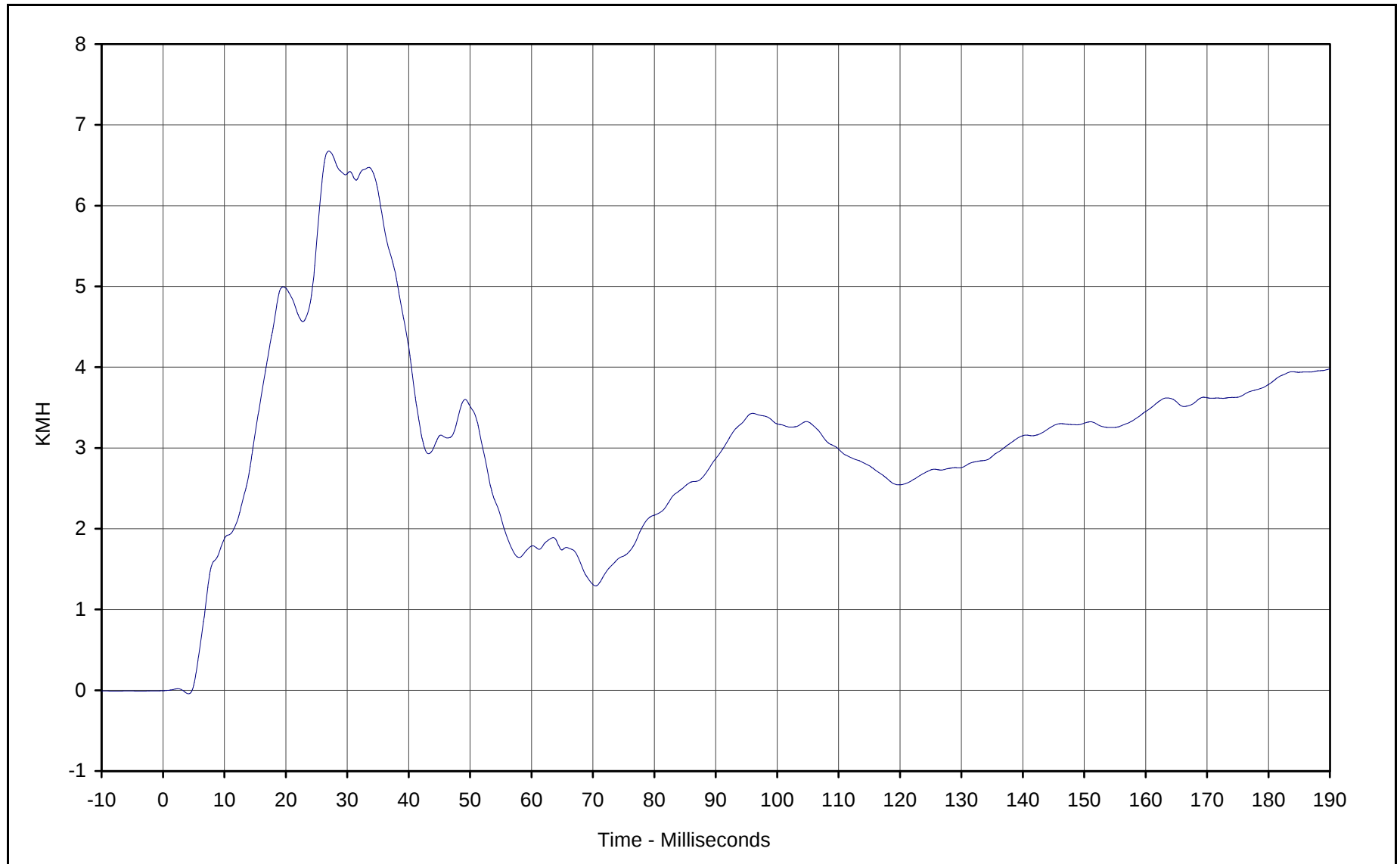




Curve Description: Vehicle CG Z
Maximum Value: 13.6 at 25.1 Milliseconds
Minimum Value: -13.2 at 39.8 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-052

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

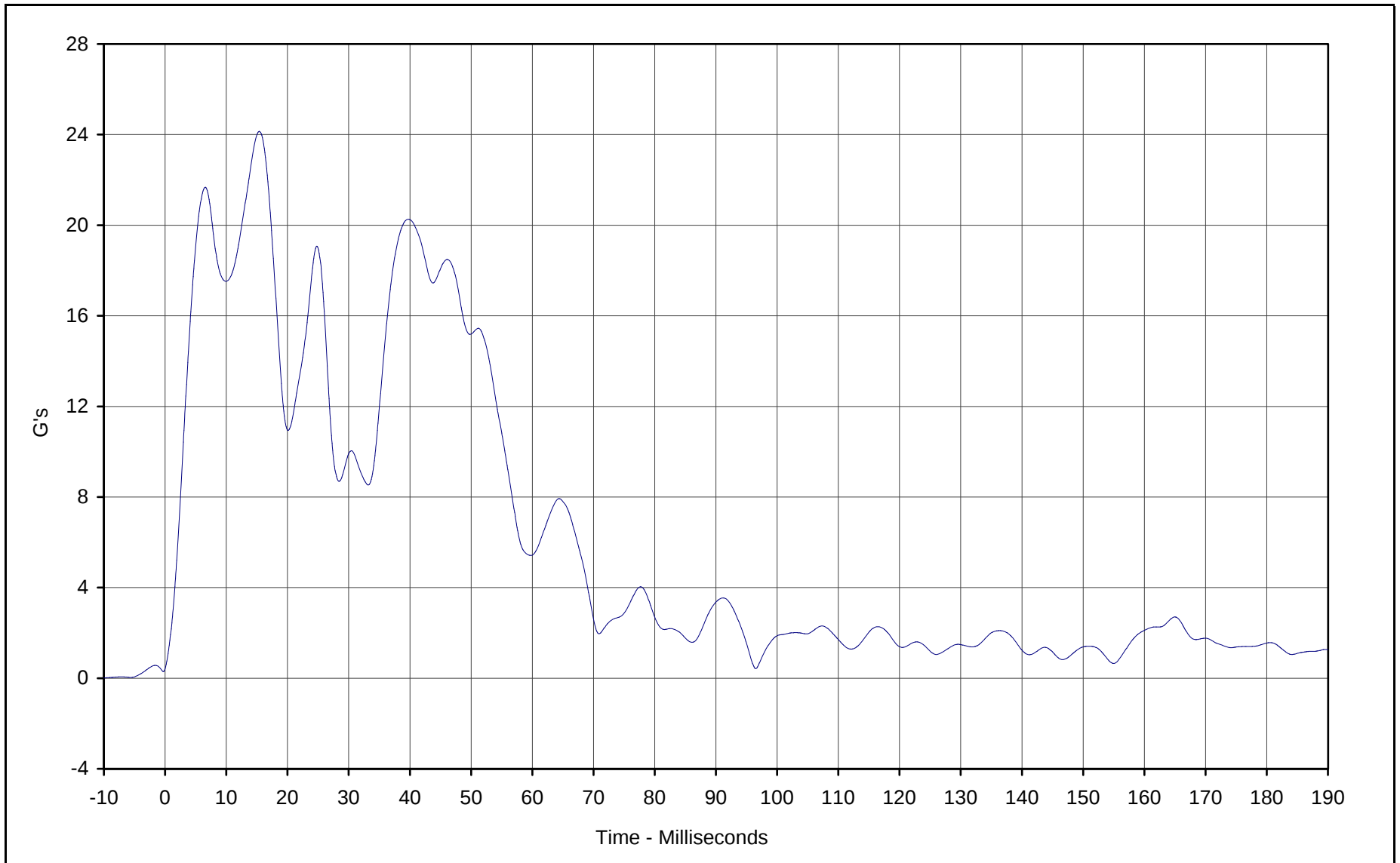




Curve Description: Vehicle CG Z Velocity
Maximum Value: 6.7 at 27.0 Milliseconds
Minimum Value: 0.0 at 4.2 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-052

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

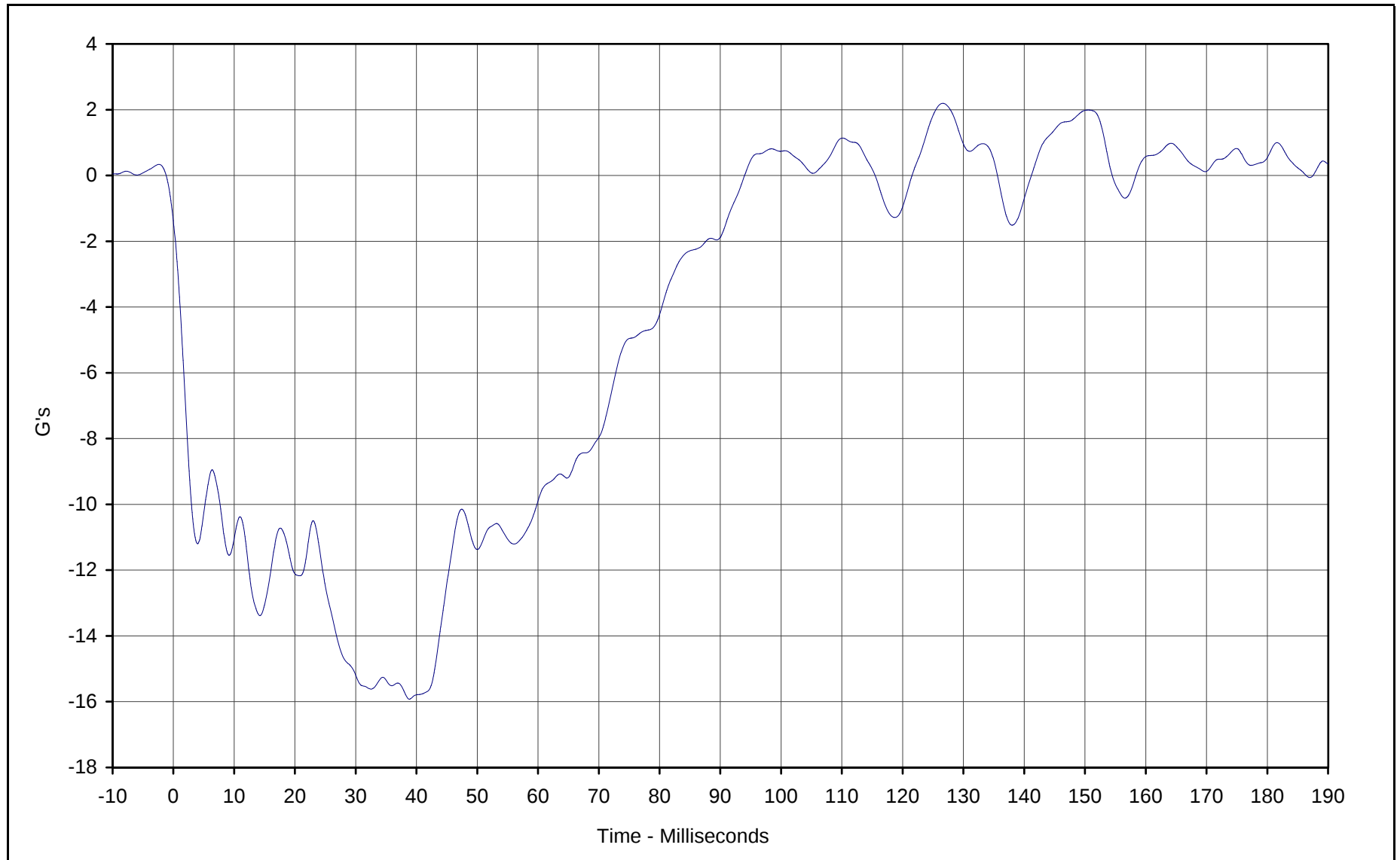




Curve Description: Vehicle CG Resultant
Maximum Value: 24.1 at 15.4 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: RES-050

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

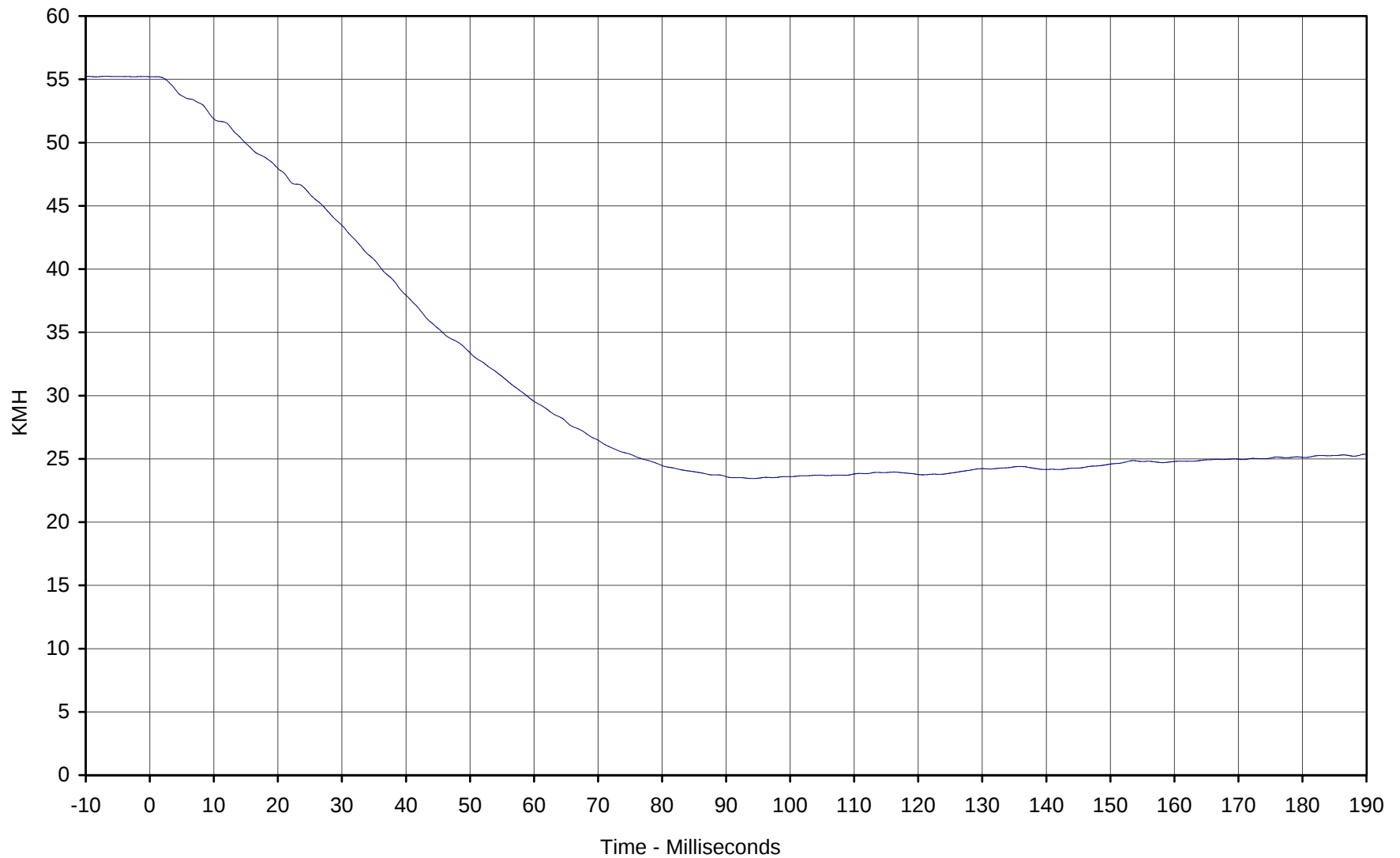




Curve Description: MDB CG X
Maximum Value: 2.2 at 126.6 Milliseconds
Minimum Value: -15.9 at 38.8 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-053

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

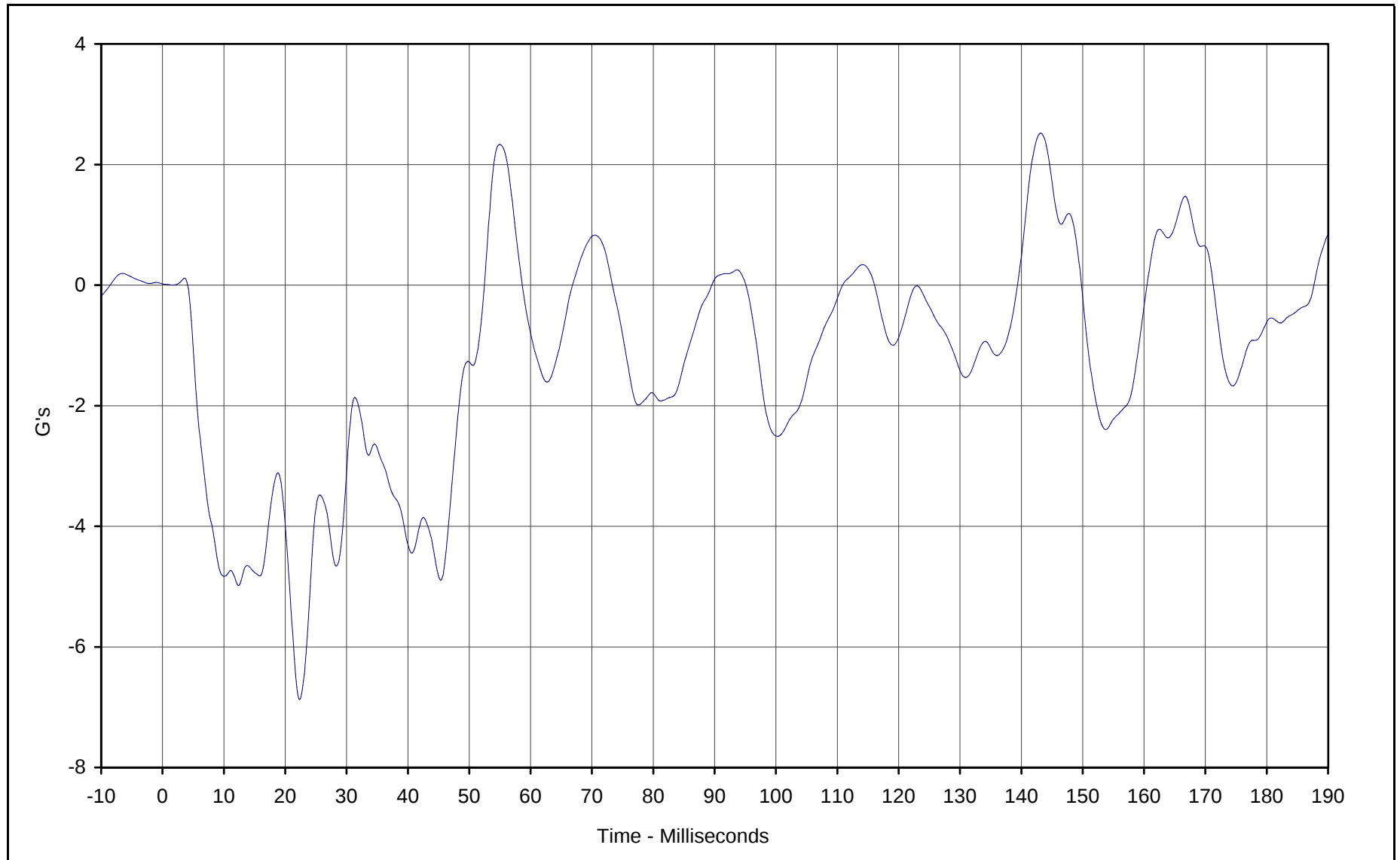




Curve Description: MDB CG X Velocity
Maximum Value: 55.2 at 0.0 Milliseconds
Minimum Value: 23.4 at 94.2 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-053

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

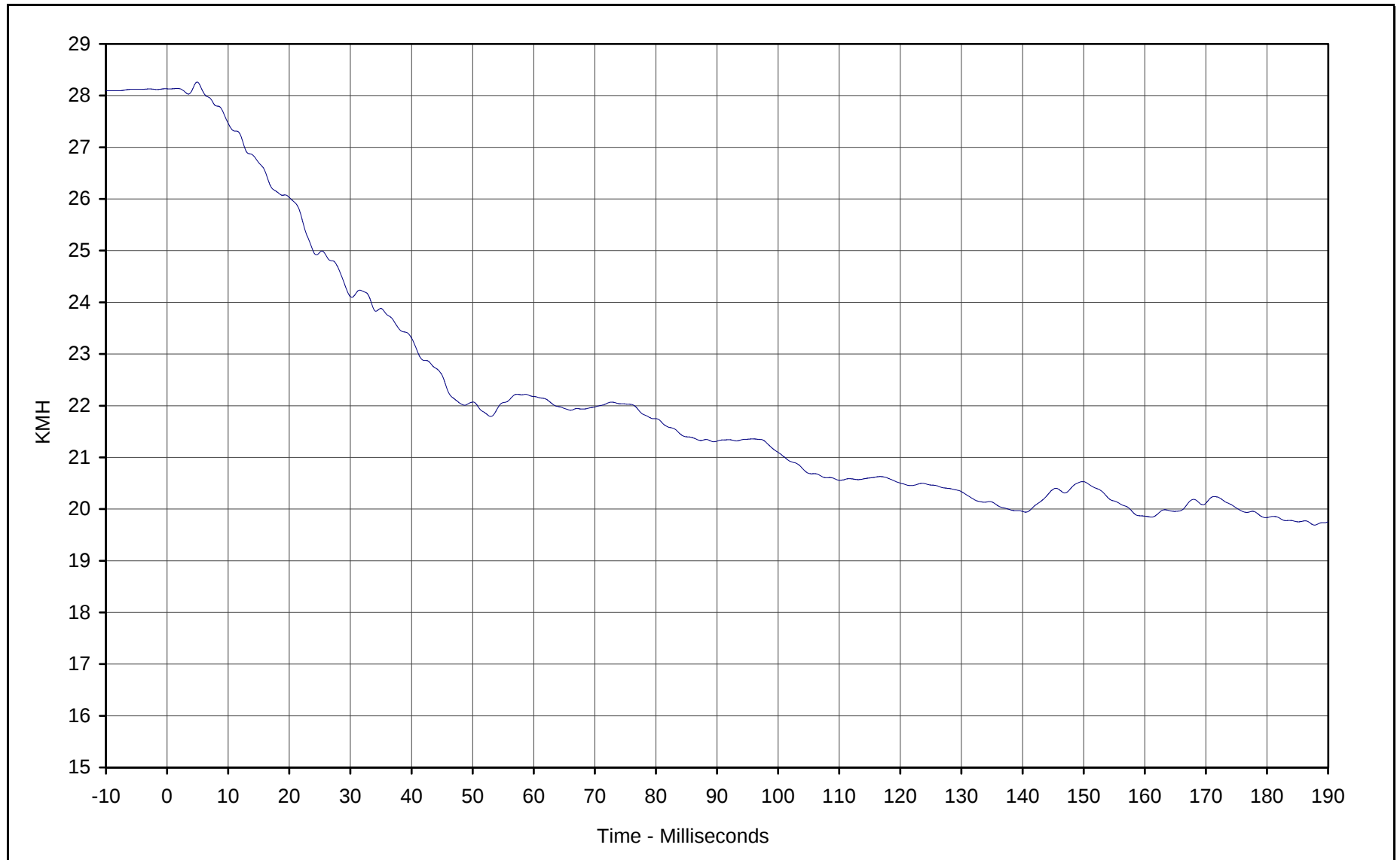




Curve Description: MDB CG Y
Maximum Value: 2.5 at 143.2 Milliseconds
Minimum Value: -6.9 at 22.4 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-054

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

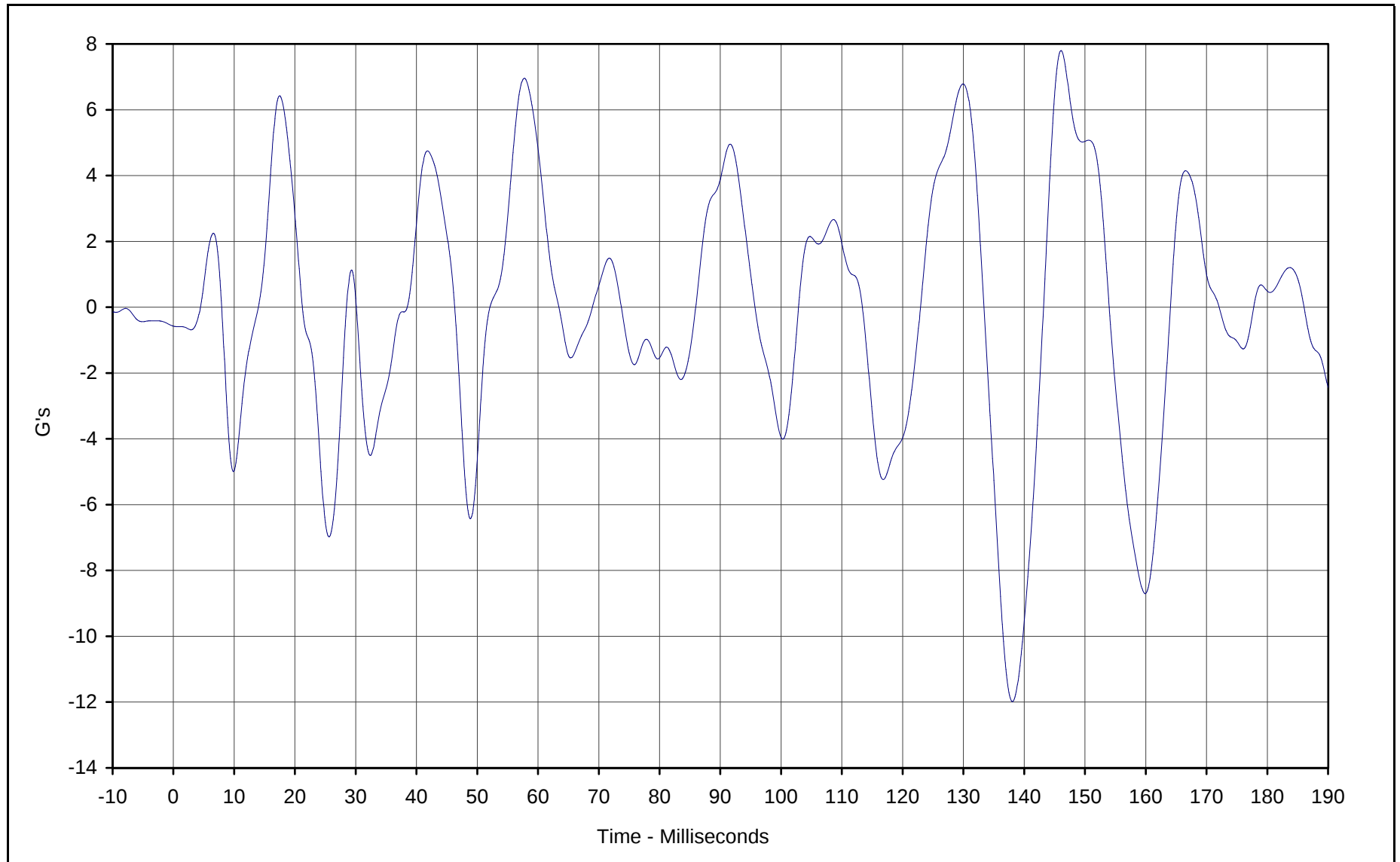




Curve Description: MDB CG Y Velocity
Maximum Value: 28.3 at 4.9 Milliseconds
Minimum Value: 19.7 at 187.8 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-054

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

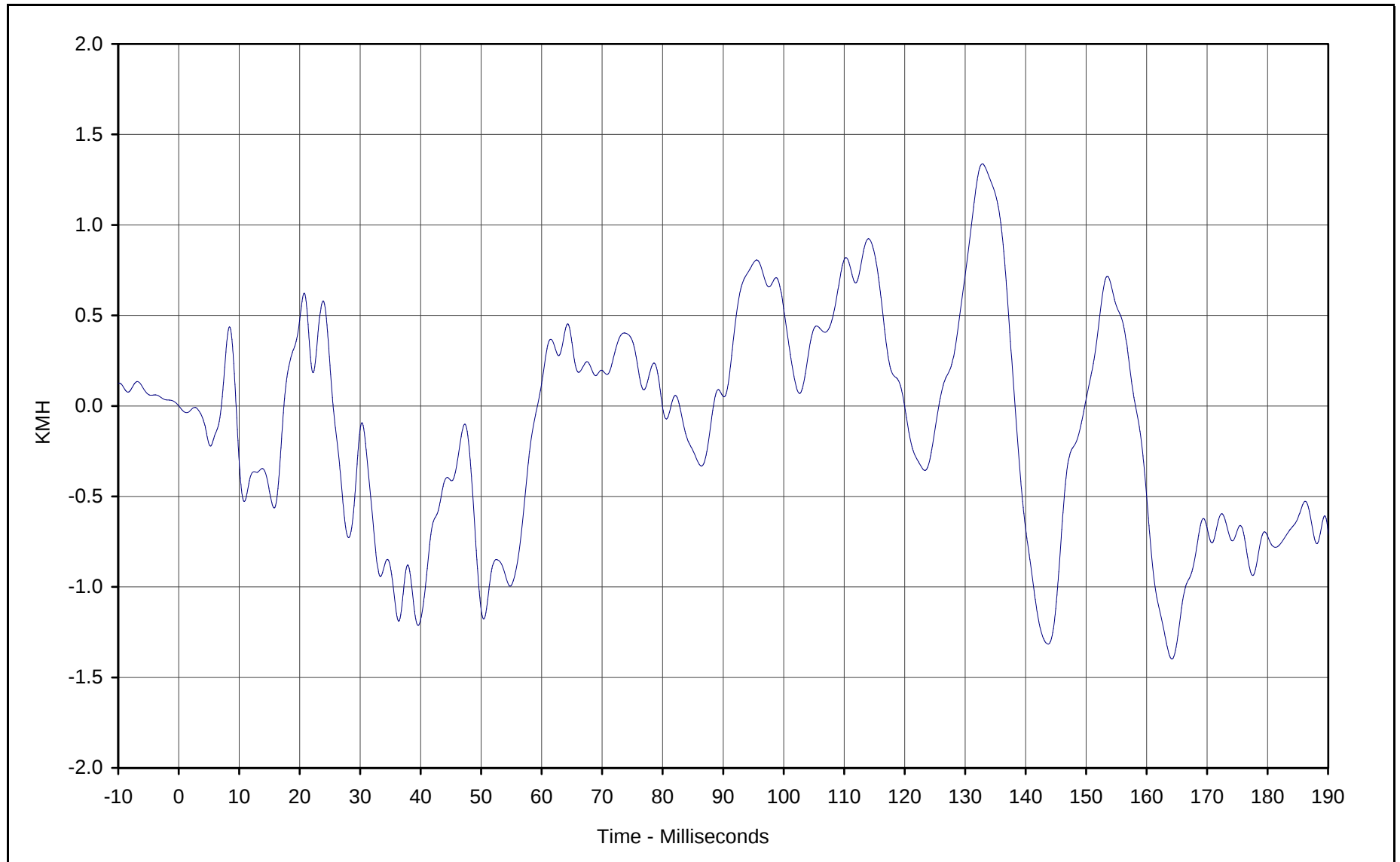




Curve Description: MDB CG Z
Maximum Value: 7.8 at 146.1 Milliseconds
Minimum Value: -12.0 at 138.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-055

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

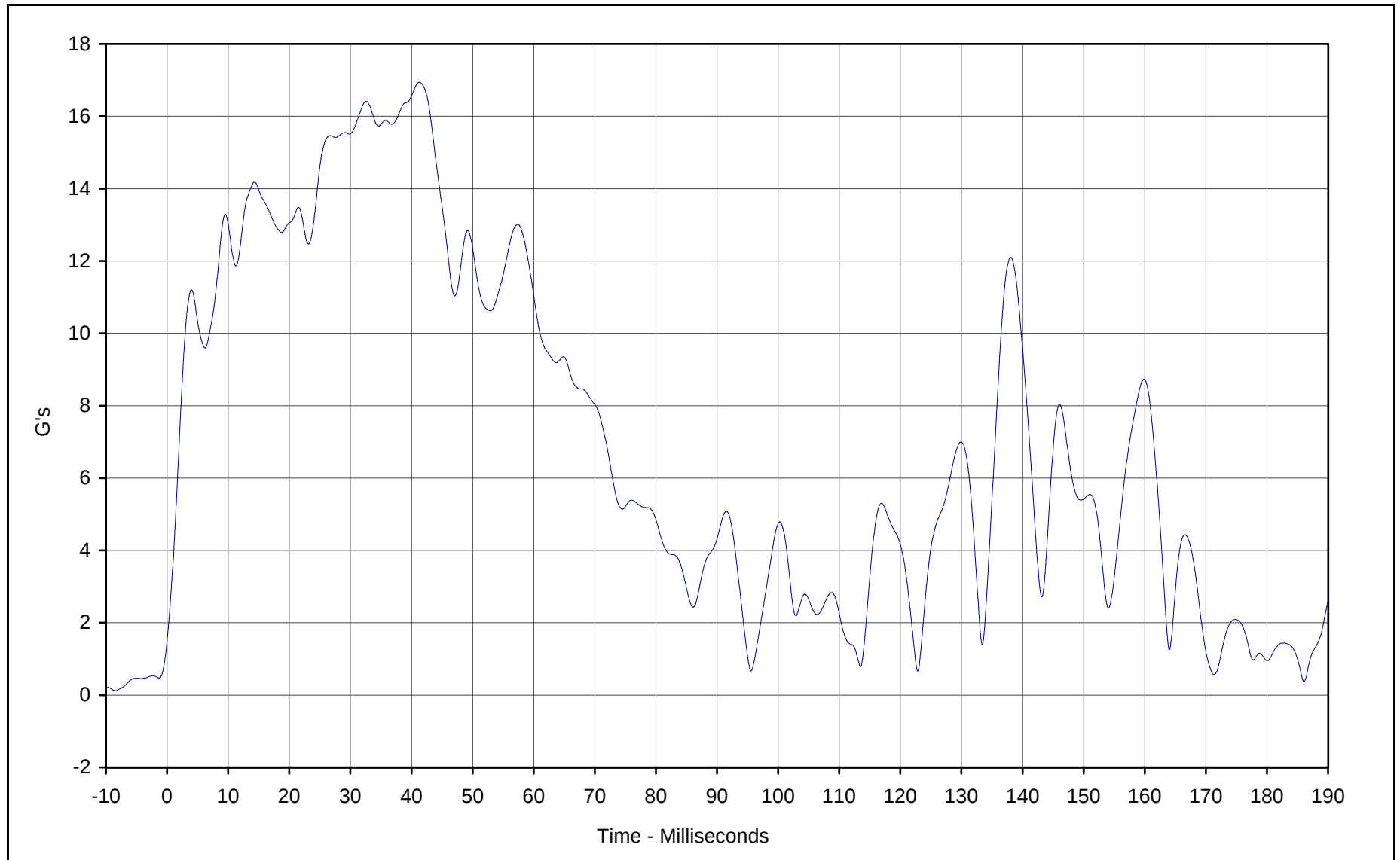




Curve Description: MDB CG Z Velocity
Maximum Value: 1.3 at 132.9 Milliseconds
Minimum Value: -1.4 at 164.2 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-055

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

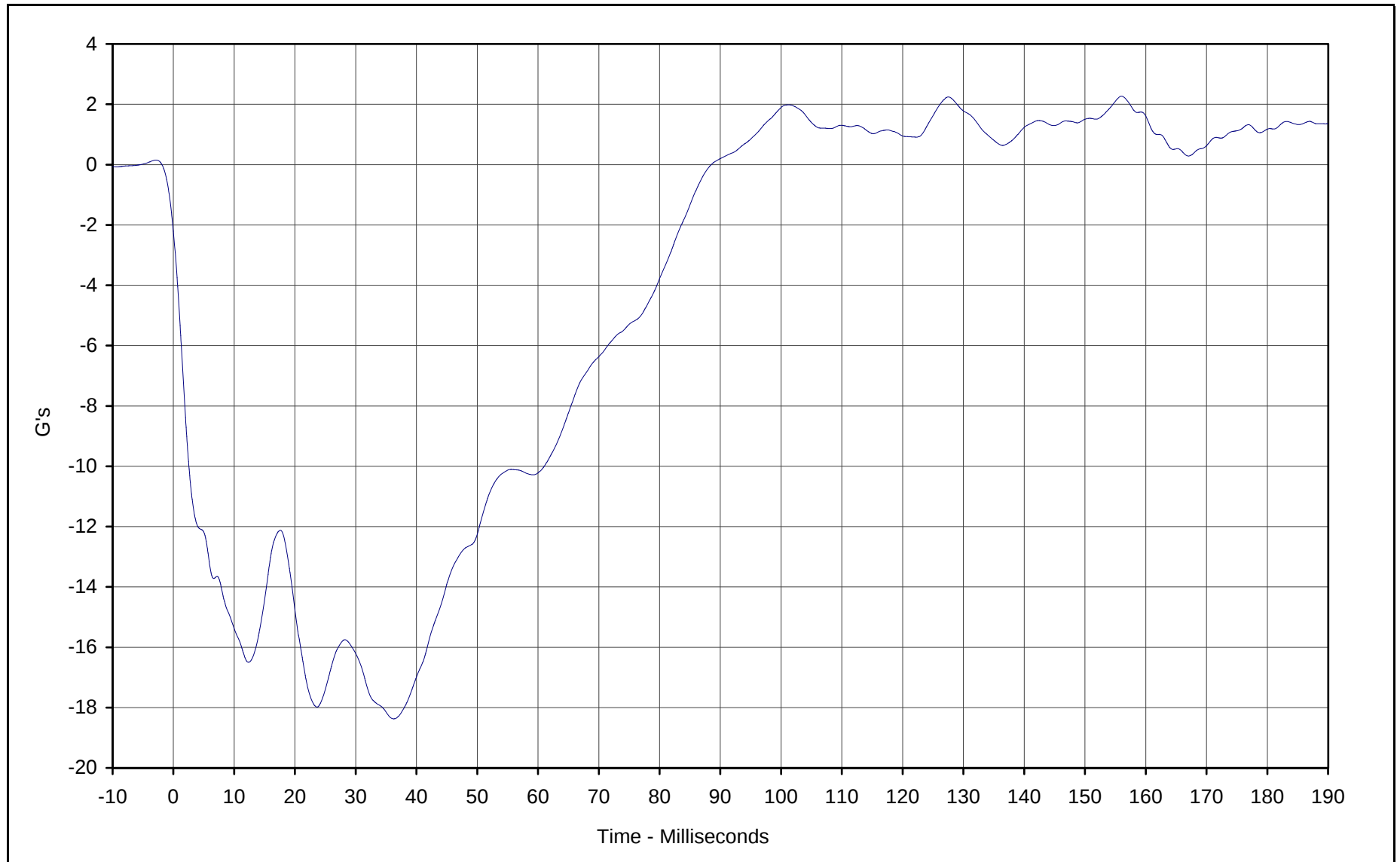




Curve Description: CG Resultant
Maximum Value: 16.9 at 41.3 Milliseconds
Minimum Value: 0.4 at 186.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: RES-053

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

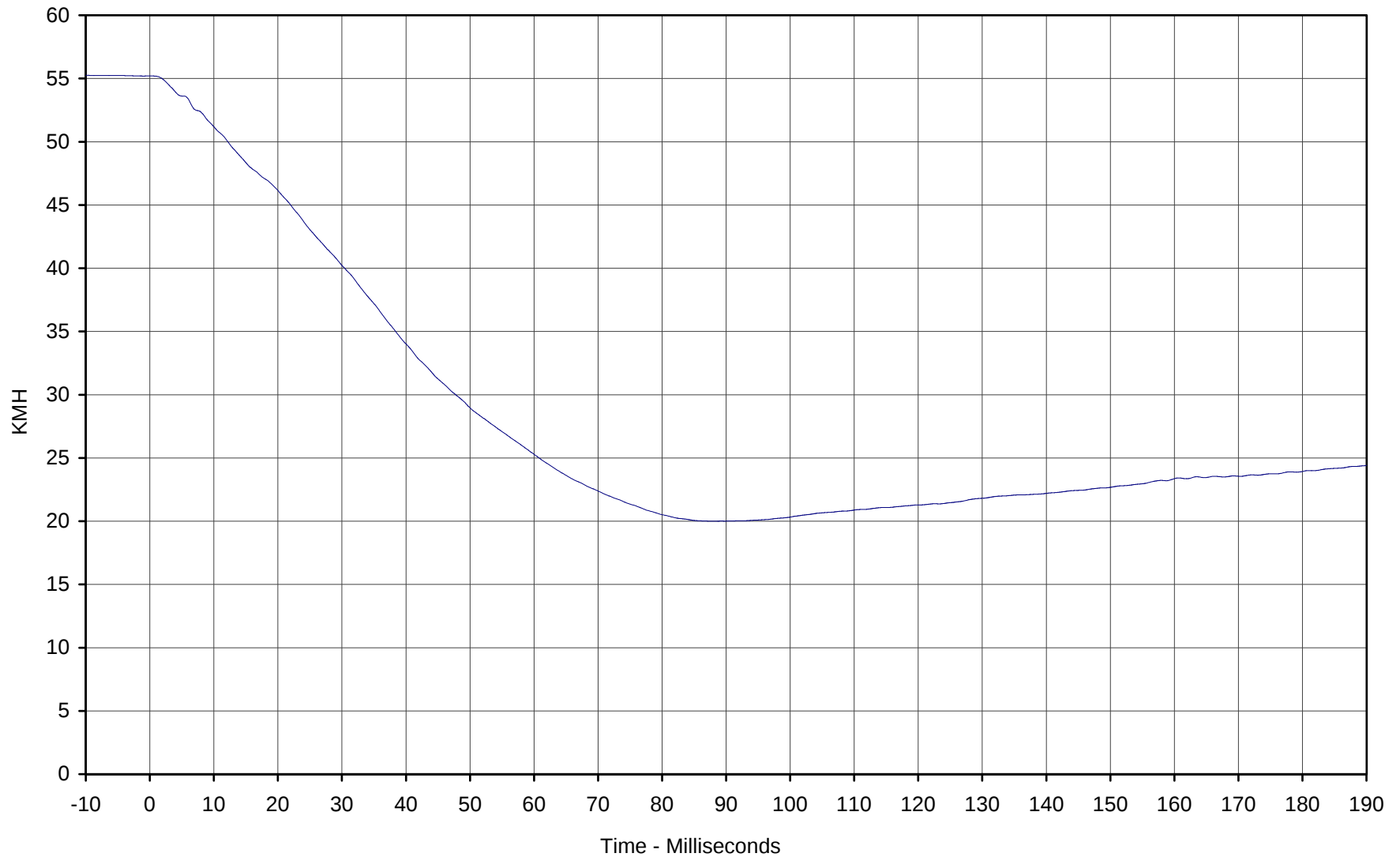




Curve Description: MDB Rear X
Maximum Value: 2.3 at 156.0 Milliseconds
Minimum Value: -18.4 at 36.3 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-056

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

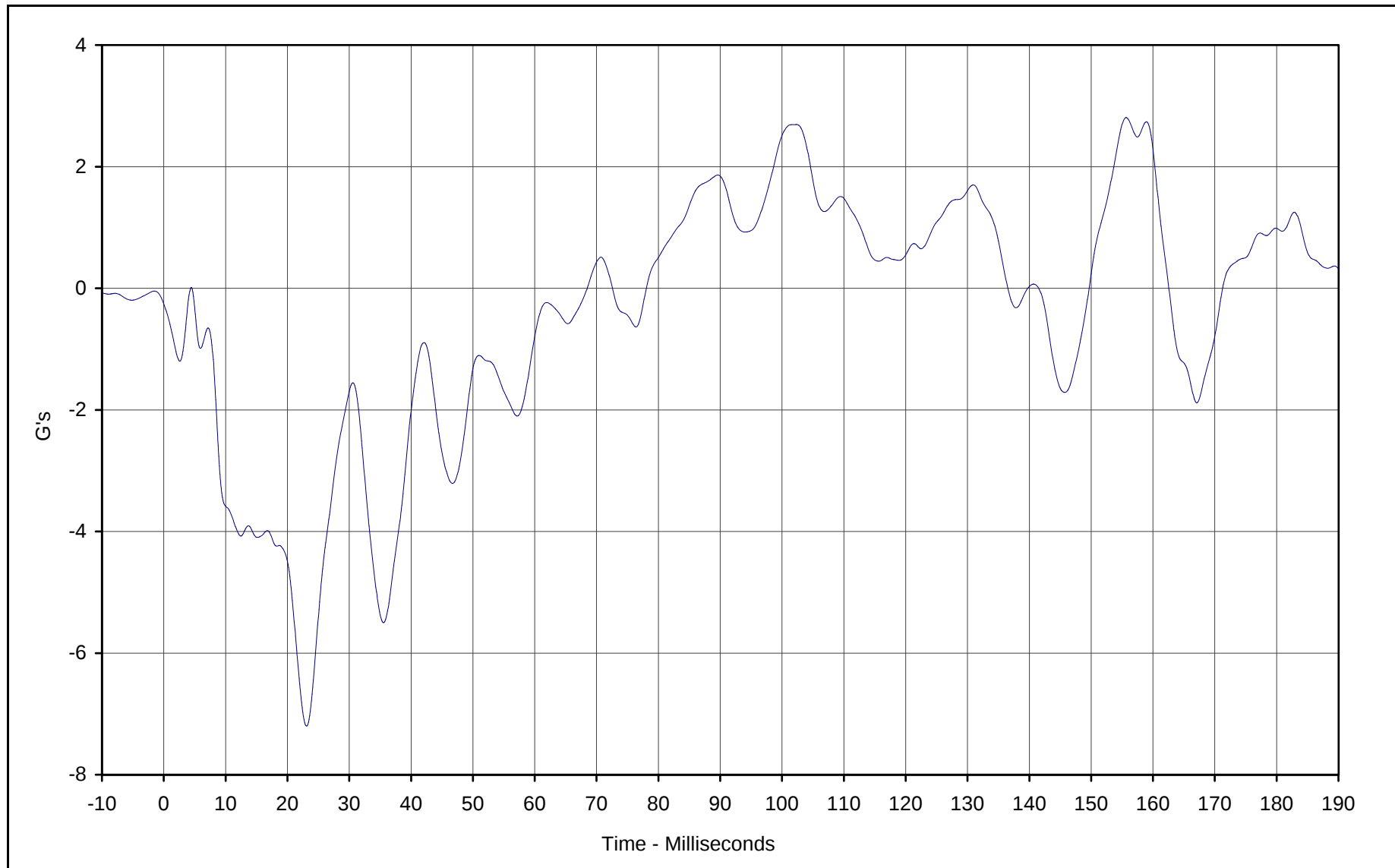




Curve Description: MDB Rear X Velocity
Maximum Value: 55.2 at 0.2 Milliseconds
Minimum Value: 20.0 at 88.1 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-056

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

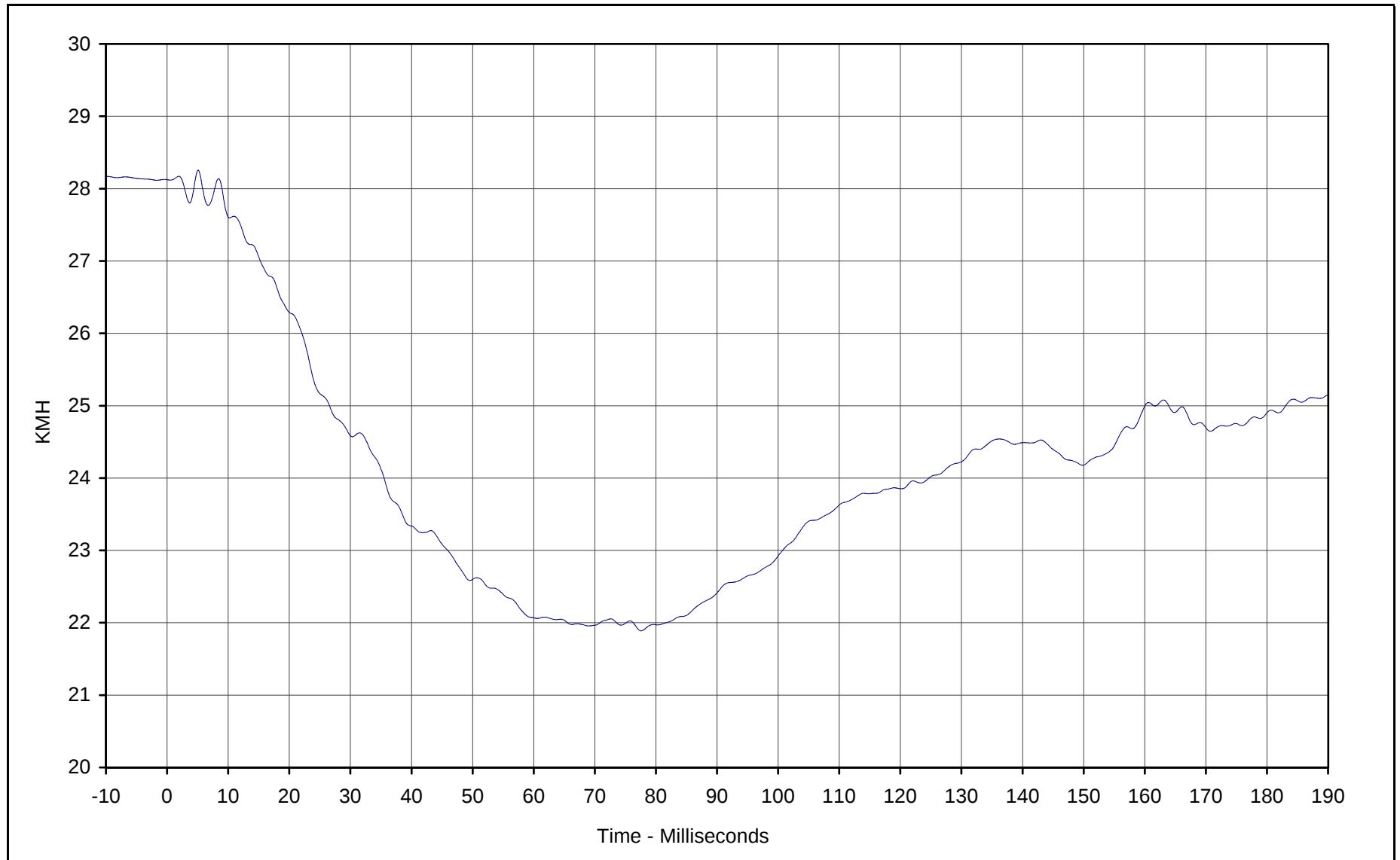




Curve Description: MDB Rear Y
Maximum Value: 2.8 at 155.6 Milliseconds
Minimum Value: -7.2 at 23.1 Milliseconds
SAE Filter Class: 60
Date of Test: 11/19/01
Curve Number: FIL-057

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

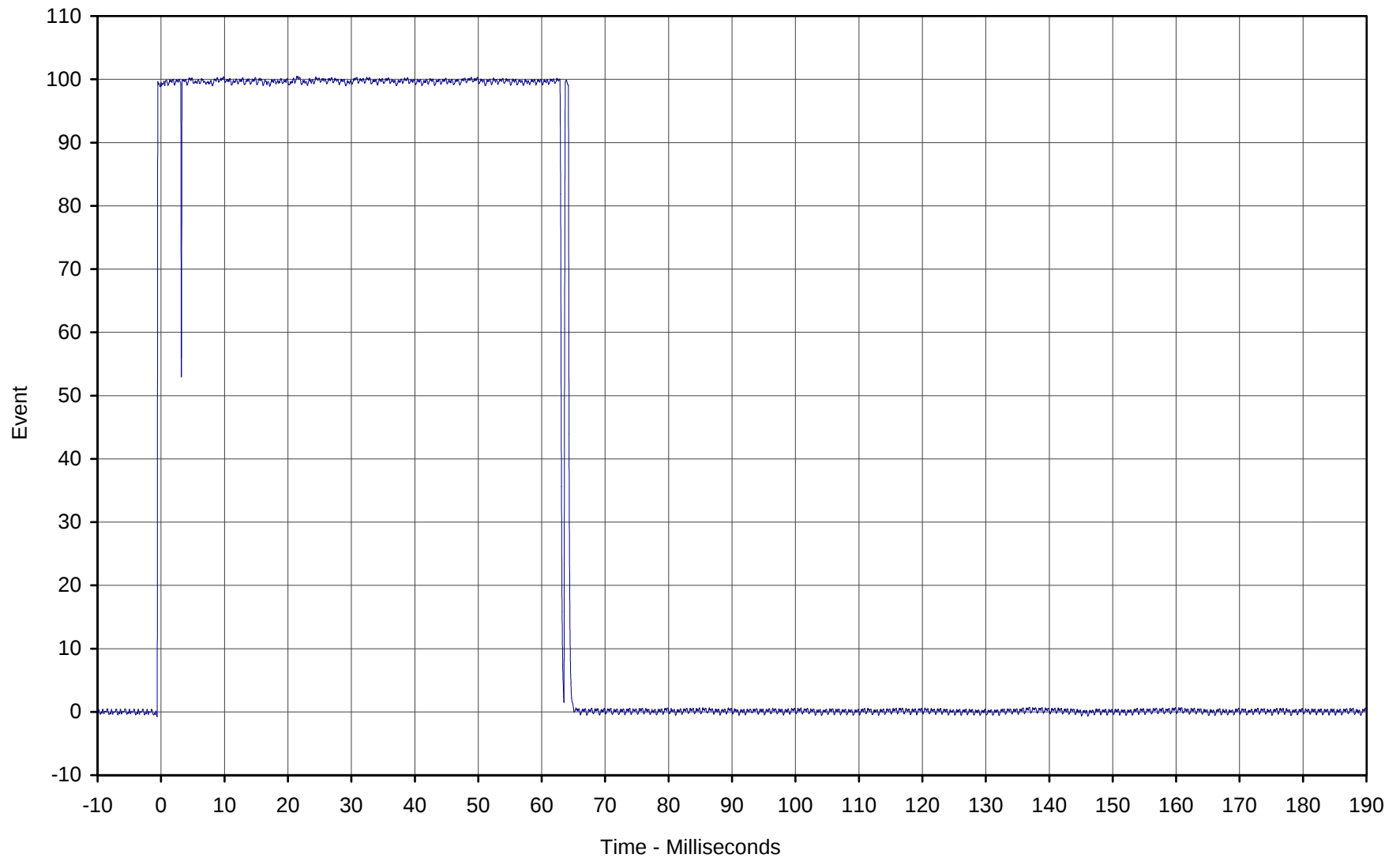




Curve Description: MDB Rear Y Velocity
Maximum Value: 28.3 at 5.1 Milliseconds
Minimum Value: 21.9 at 77.6 Milliseconds
SAE Filter Class: 180
Date of Test: 11/19/01
Curve Number: IN1-057

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

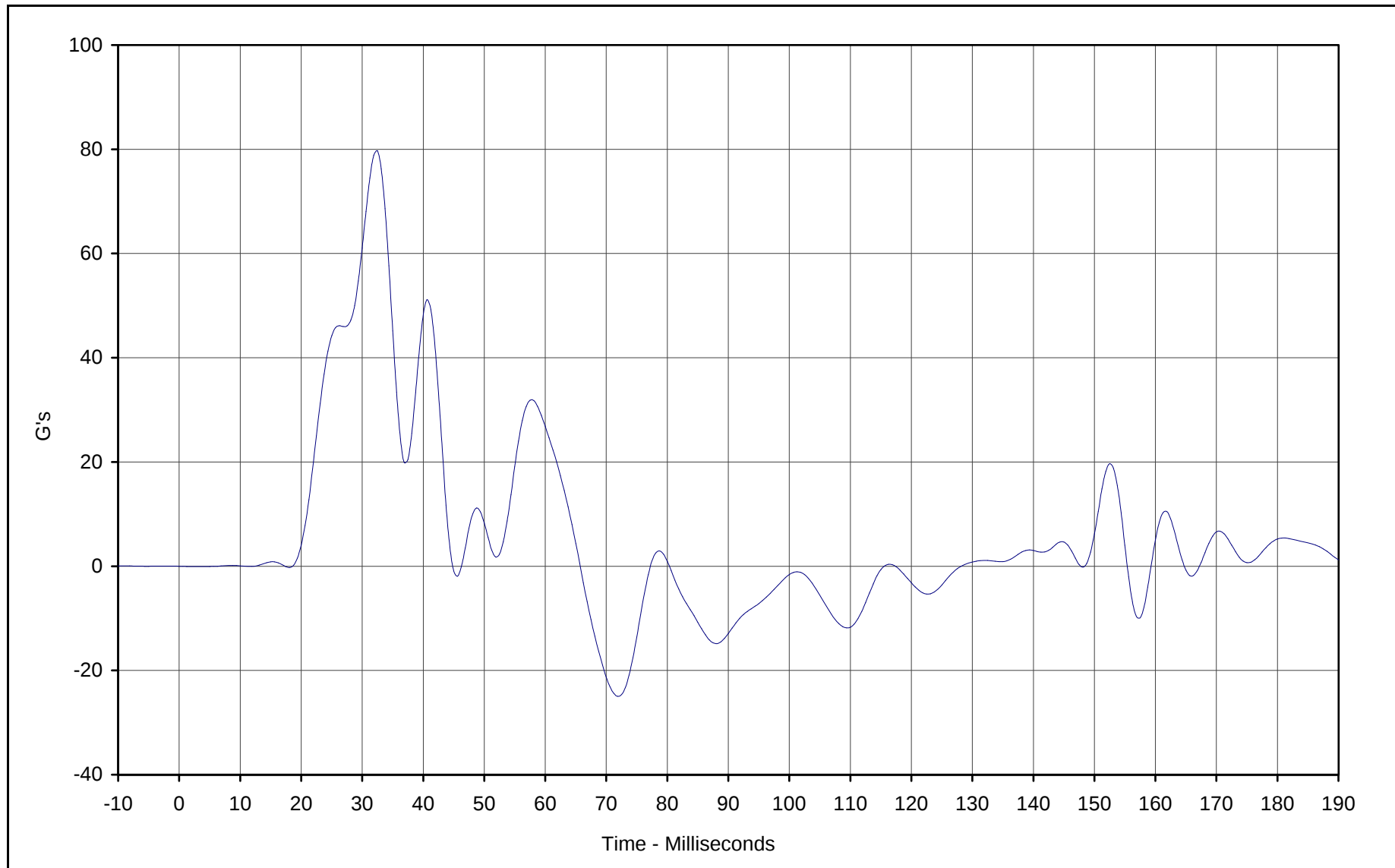




Curve Description: MDB Right Bumper Contact
Maximum Value: 100.5 at 21.4 Milliseconds
Crossing Point: 50% at -0.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01
Curve Number: FIL-058

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

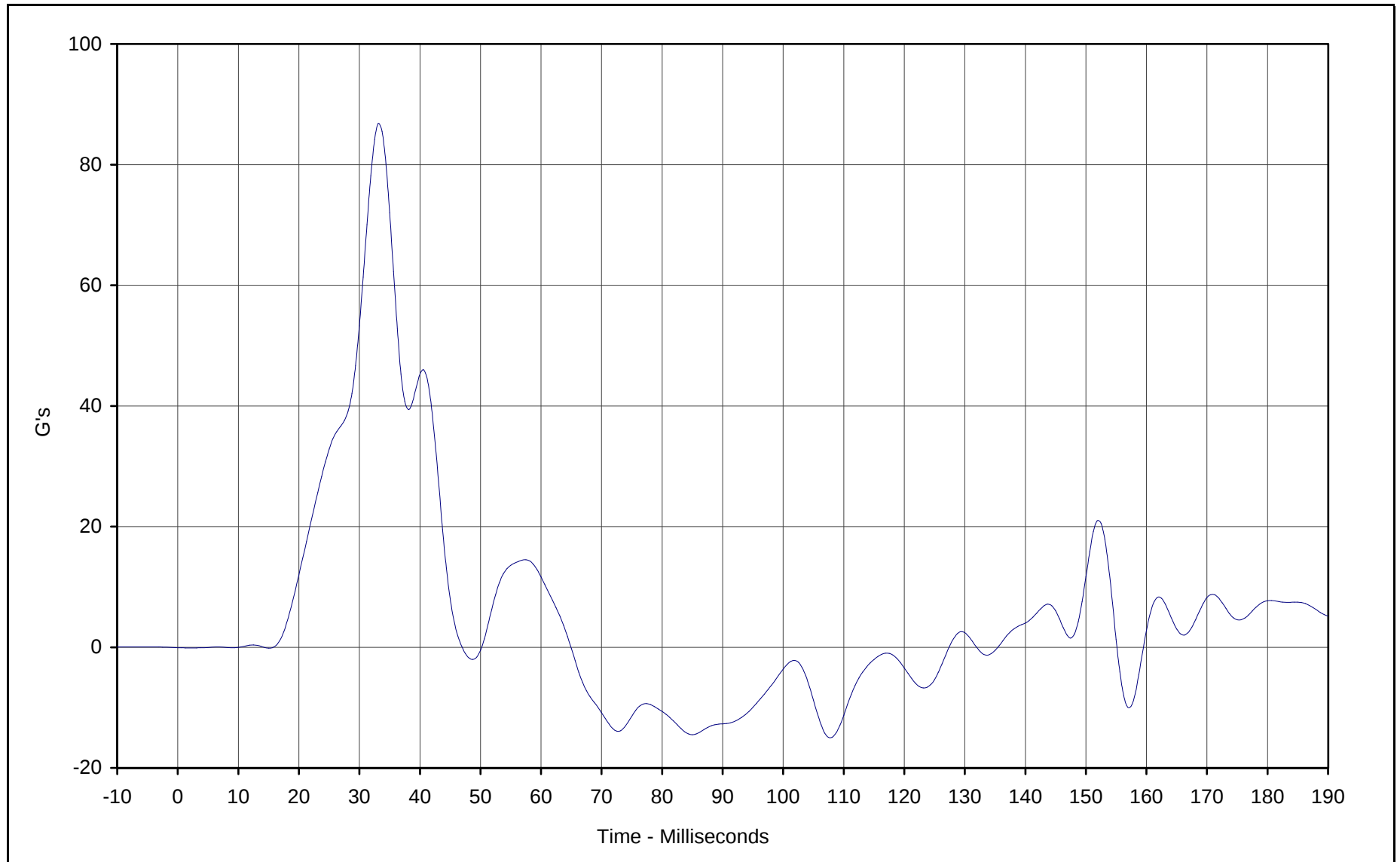




Curve Description: Driver Upper Rib Primary Y
Maximum Value: 79.7 at 32.5 Milliseconds
Minimum Value: -25.0 at 71.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-004

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

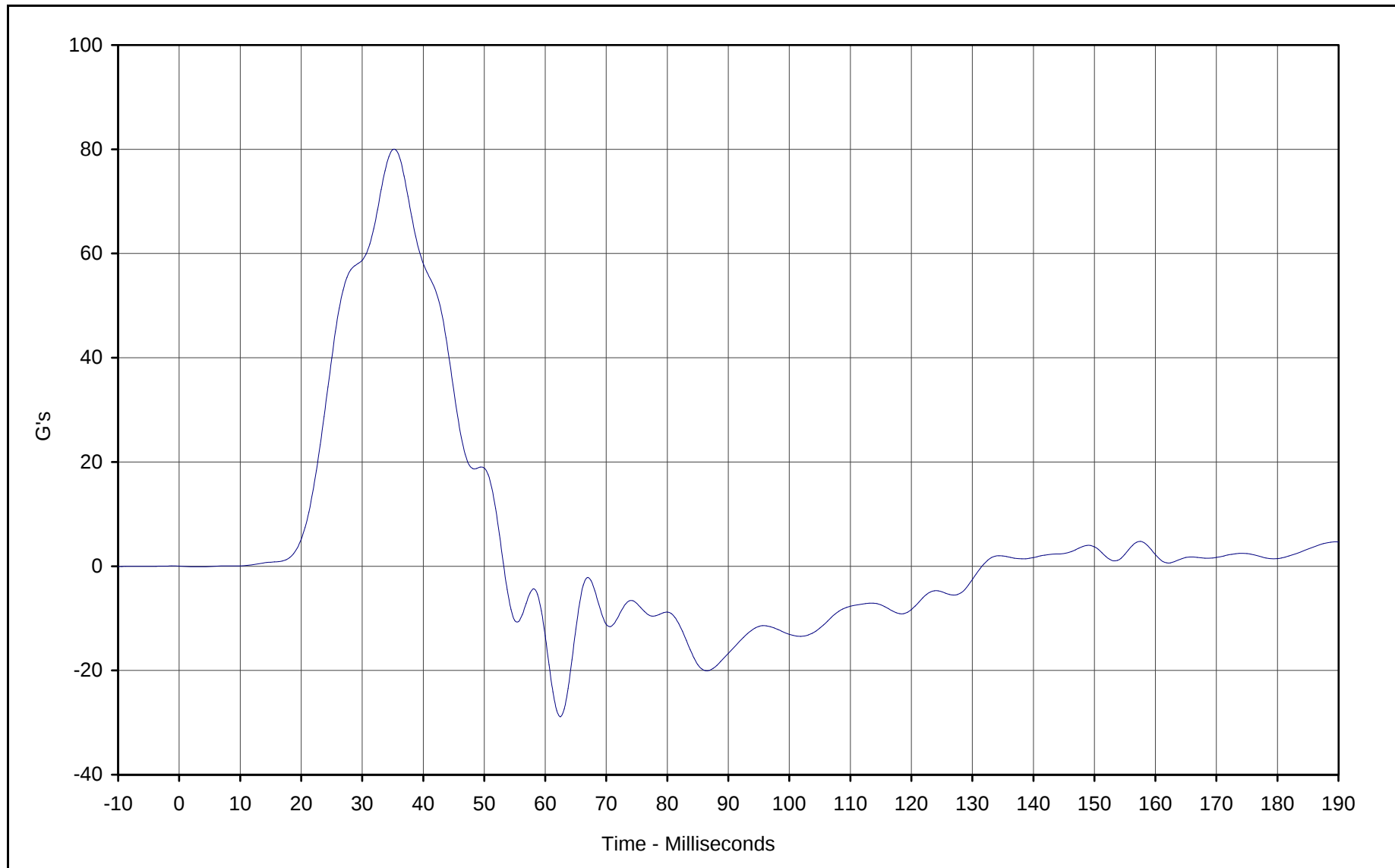




Curve Description: Driver Lower Rib Primary Y
Maximum Value: 86.8 at 33.1 Milliseconds
Minimum Value: -14.9 at 107.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-005

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

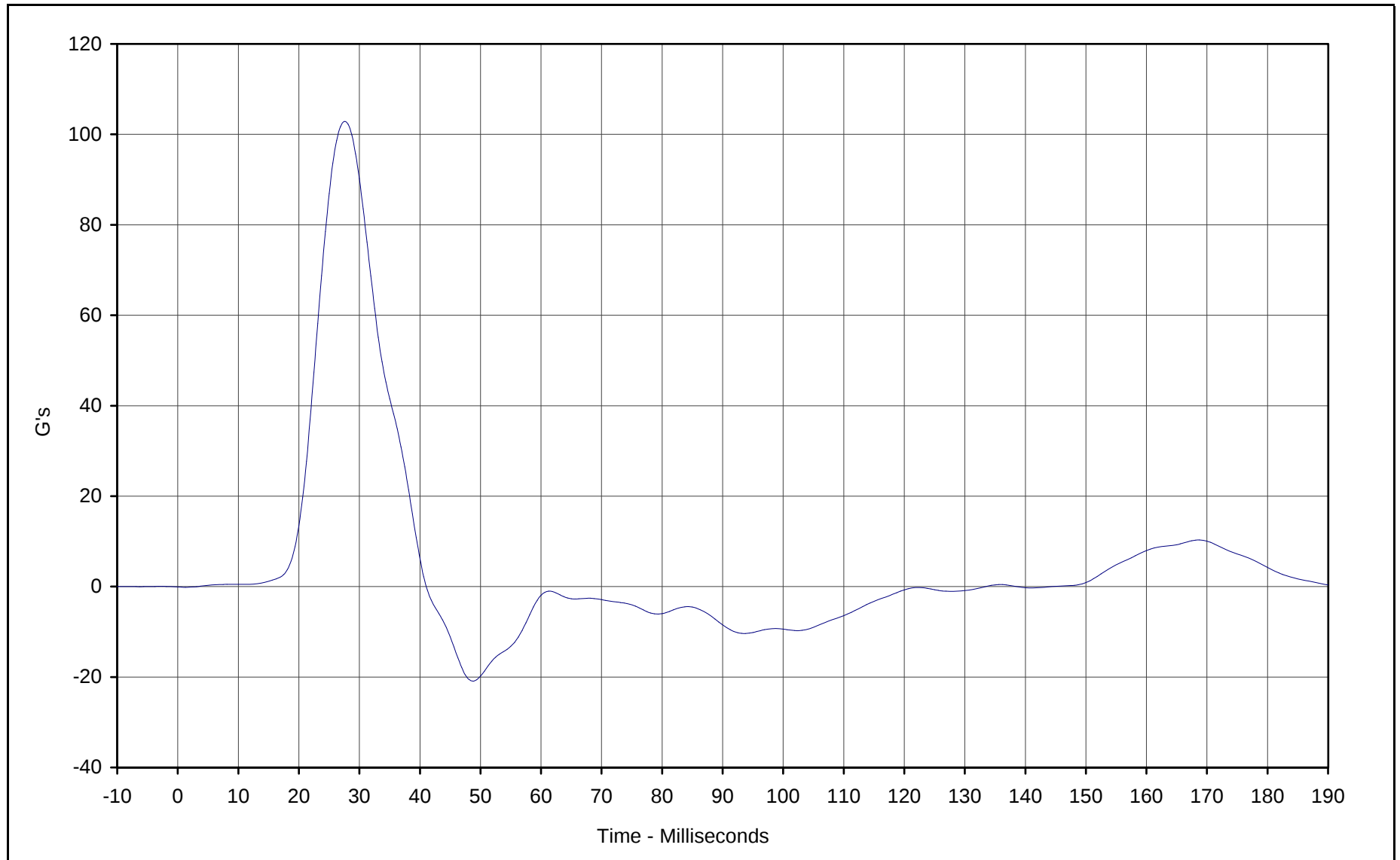




Curve Description: Driver Lower Spine Primary Y
Maximum Value: 80.0 at 35.0 Milliseconds
Minimum Value: -28.9 at 62.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-006

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

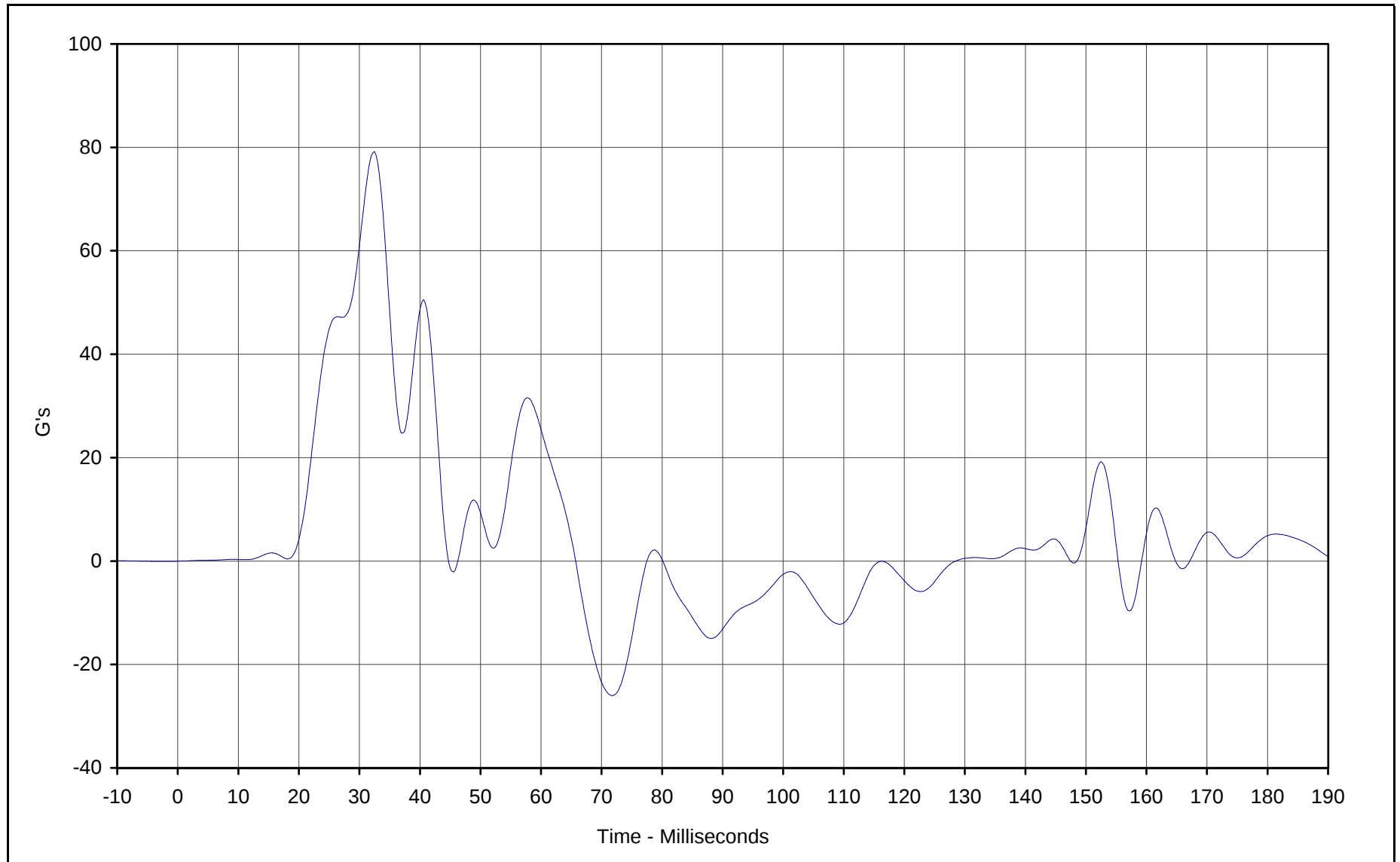




Curve Description: Driver Pelvis Primary Y
Maximum Value: 102.9 at 27.5 Milliseconds
Minimum Value: -20.9 at 48.8 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-007

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

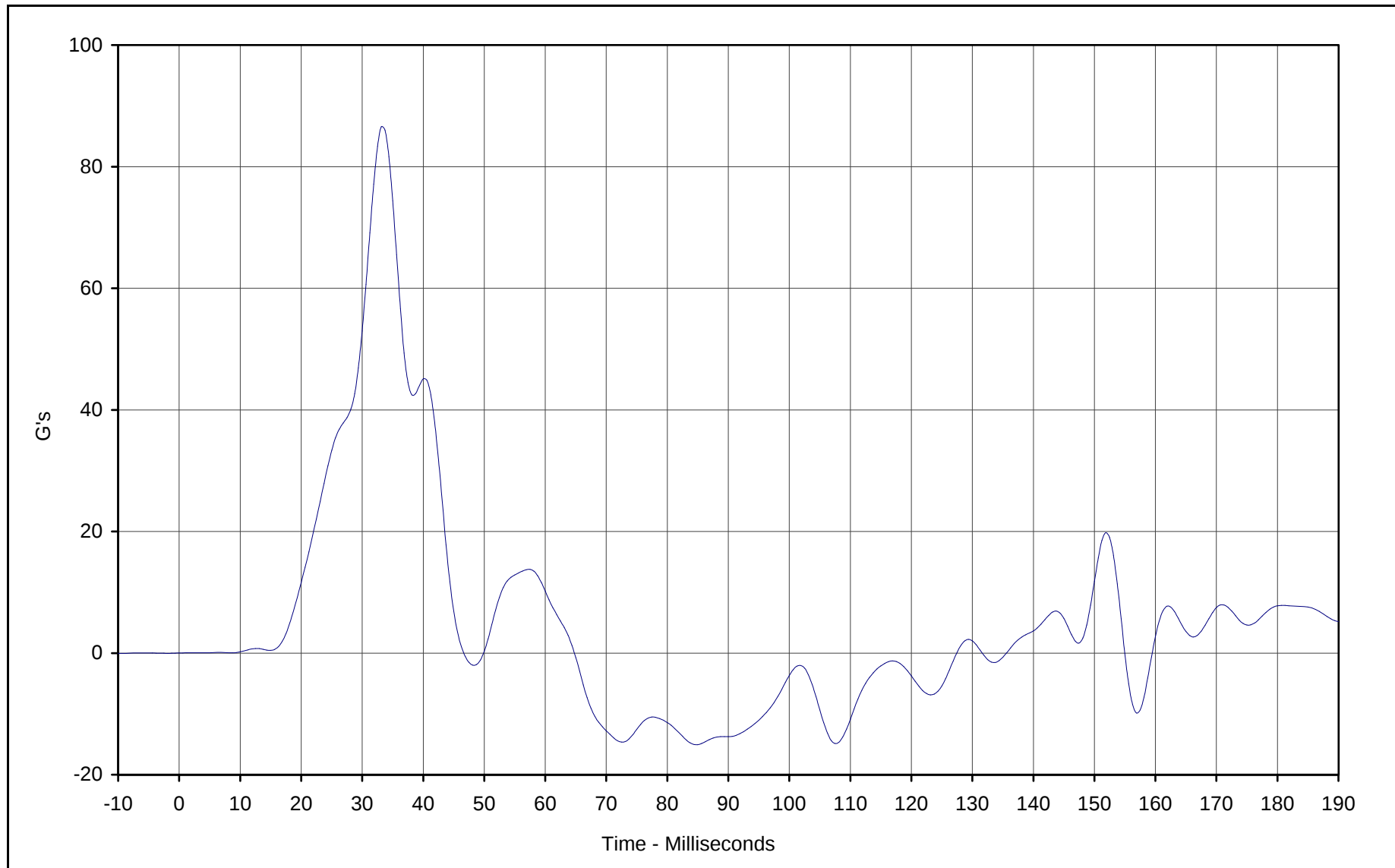




Curve Description: Driver Upper Rib Redundant Y
Maximum Value: 79.2 at 32.5 Milliseconds
Minimum Value: -26.0 at 71.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-008

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

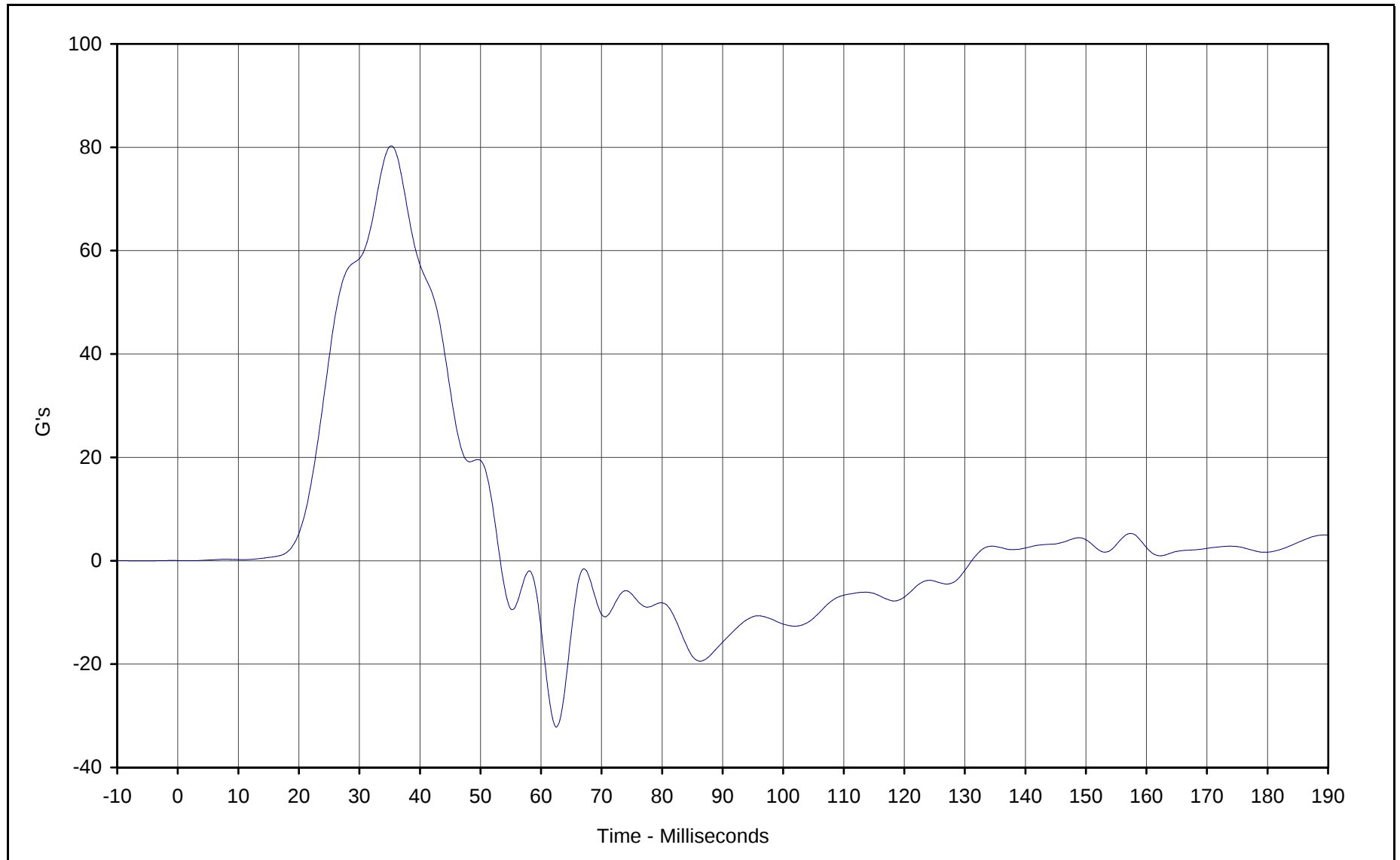




Curve Description: Driver Lower Rib Redundant Y
Maximum Value: 86.5 at 33.1 Milliseconds
Minimum Value: -15.1 at 85.0 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-009

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

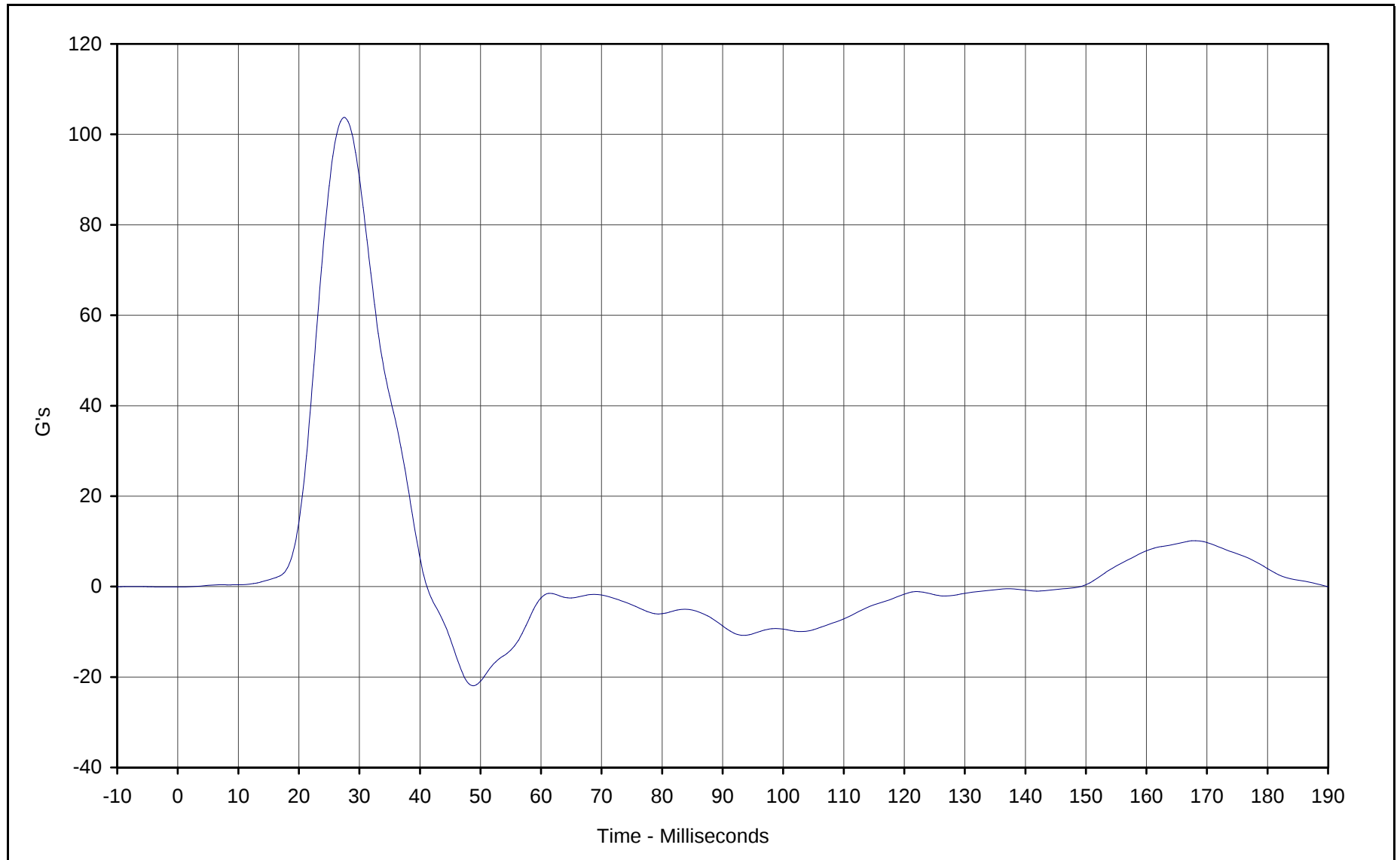




Curve Description: Driver Lower Spine Redundant Y
Maximum Value: 80.1 at 35.0 Milliseconds
Minimum Value: -32.2 at 62.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-010

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

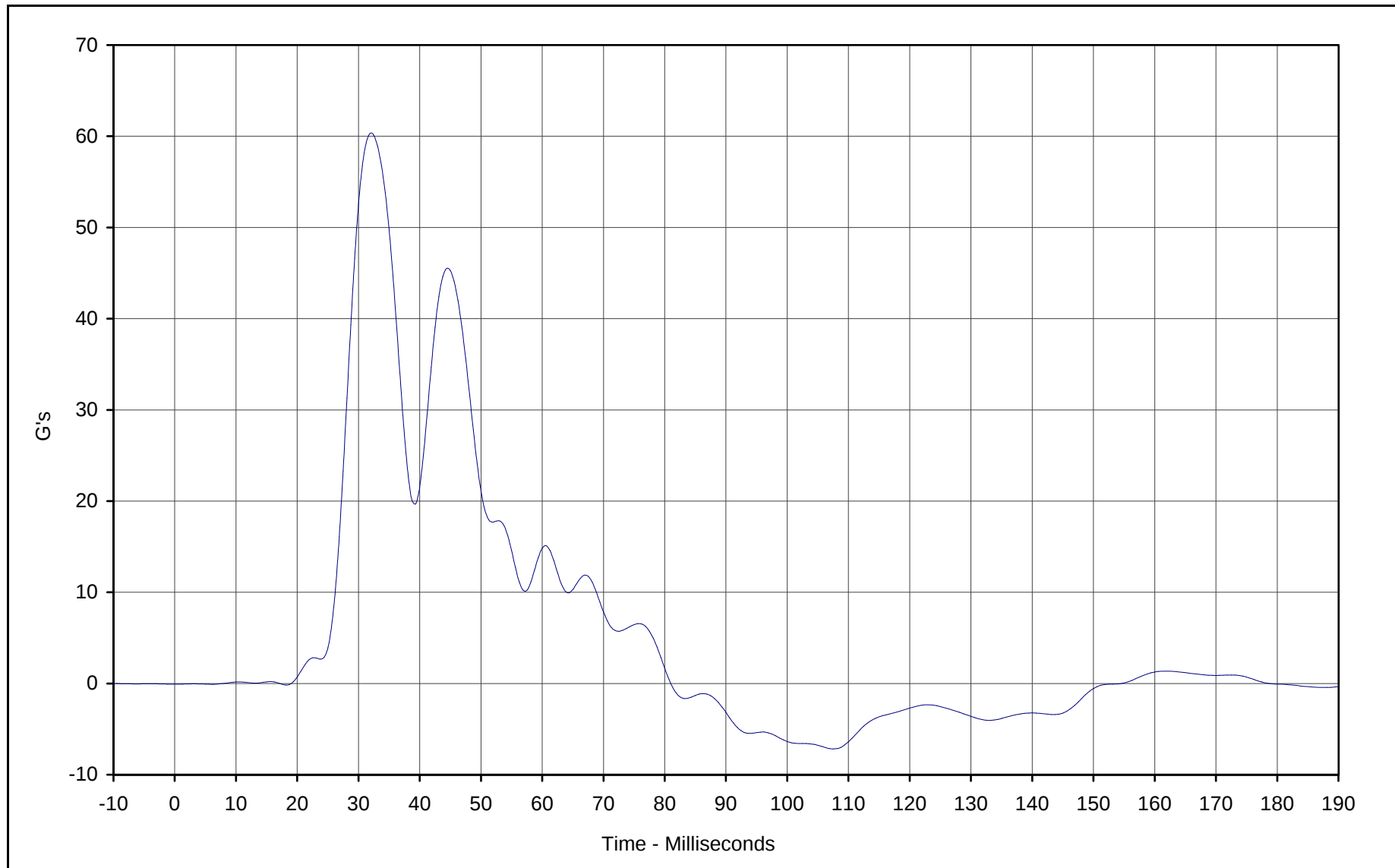




Curve Description: Driver Pelvis Redundant Y
Maximum Value: 103.7 at 27.5 Milliseconds
Minimum Value: -21.9 at 48.8 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-011

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

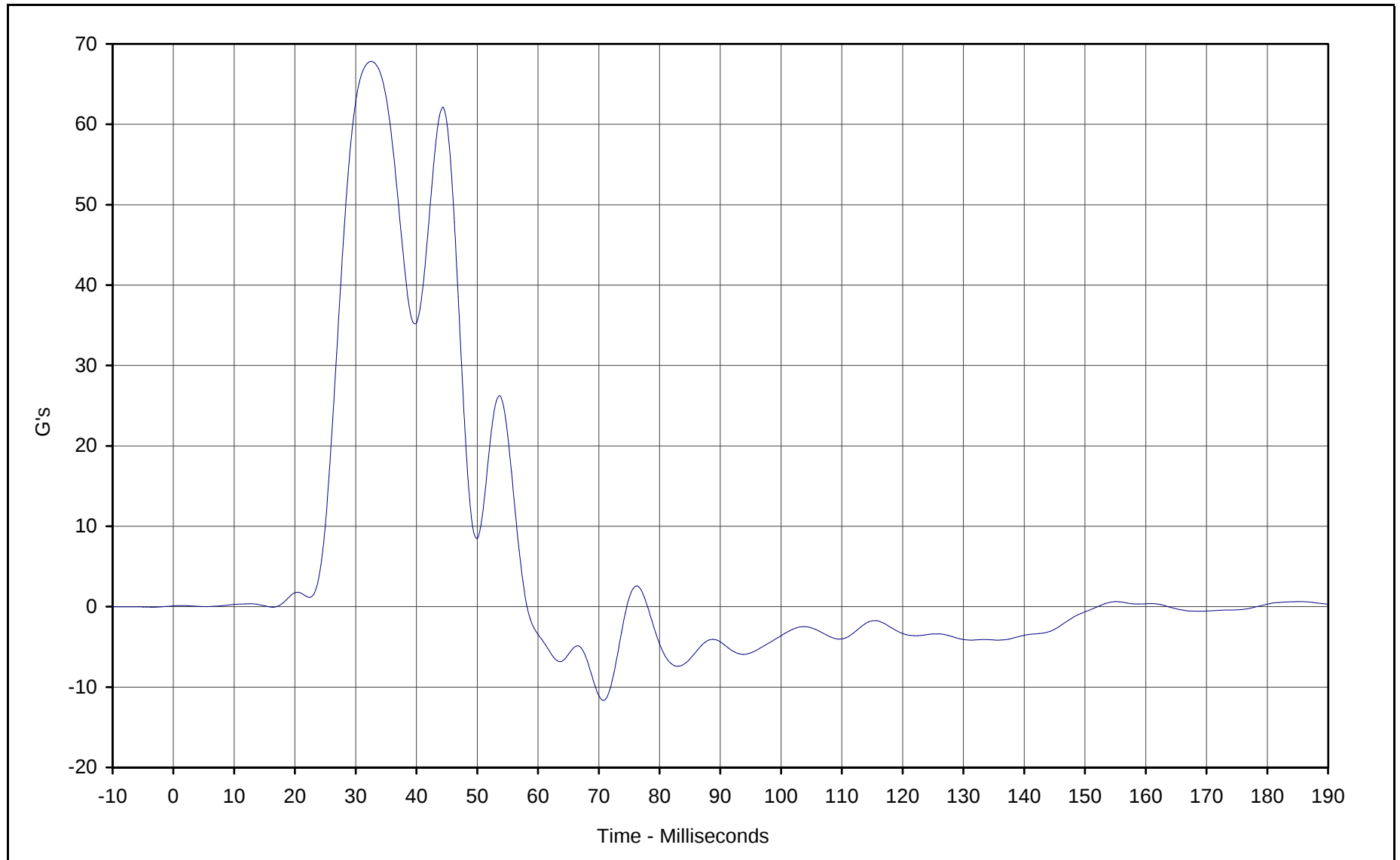




Curve Description: Pass. Upper Rib Primary Y
Maximum Value: 60.3 at 31.9 Milliseconds
Minimum Value: -7.2 at 107.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-017

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

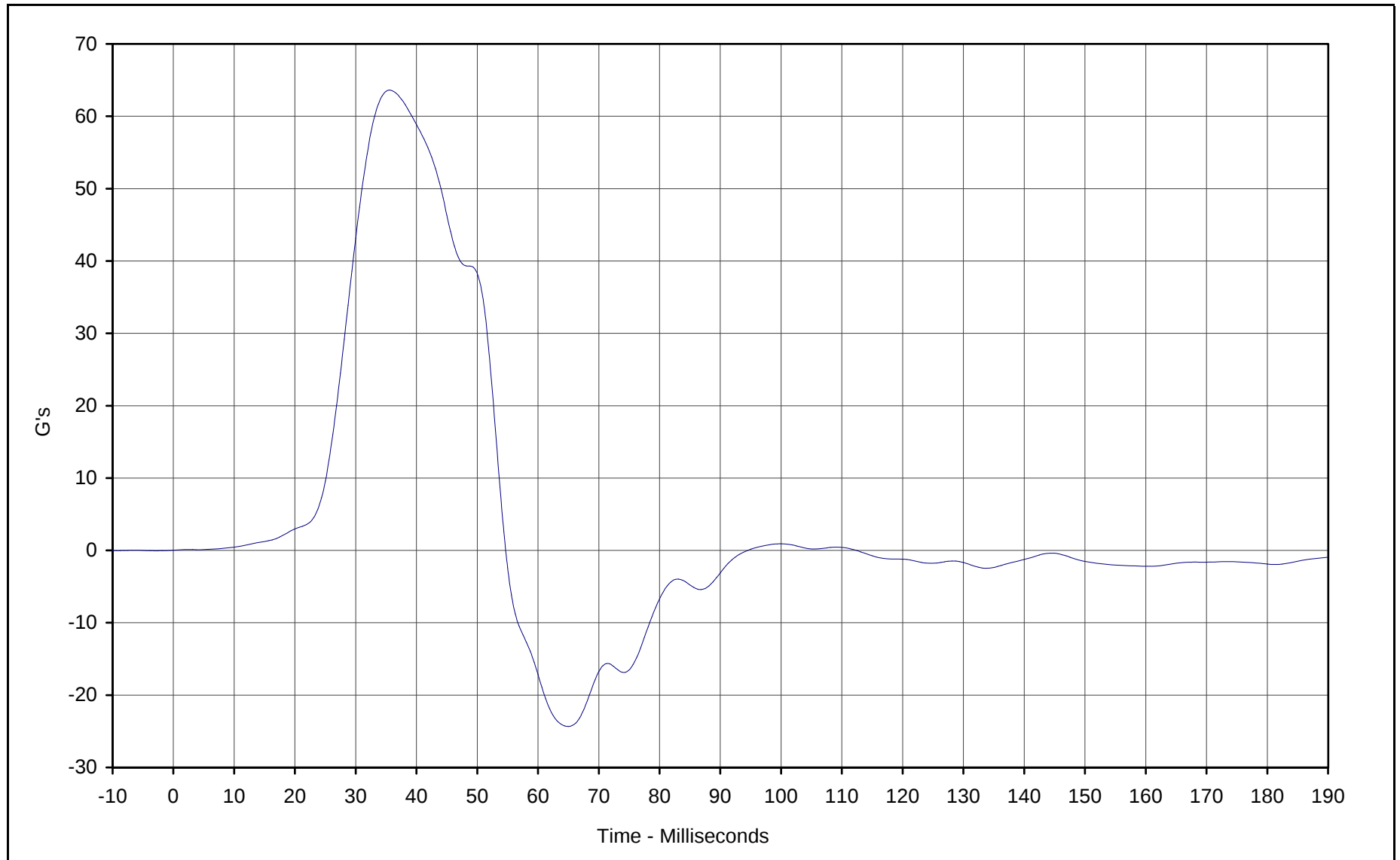




Curve Description: Pass. Lower Rib Primary Y
Maximum Value: 67.8 at 32.5 Milliseconds
Minimum Value: -11.7 at 70.6 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-018

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

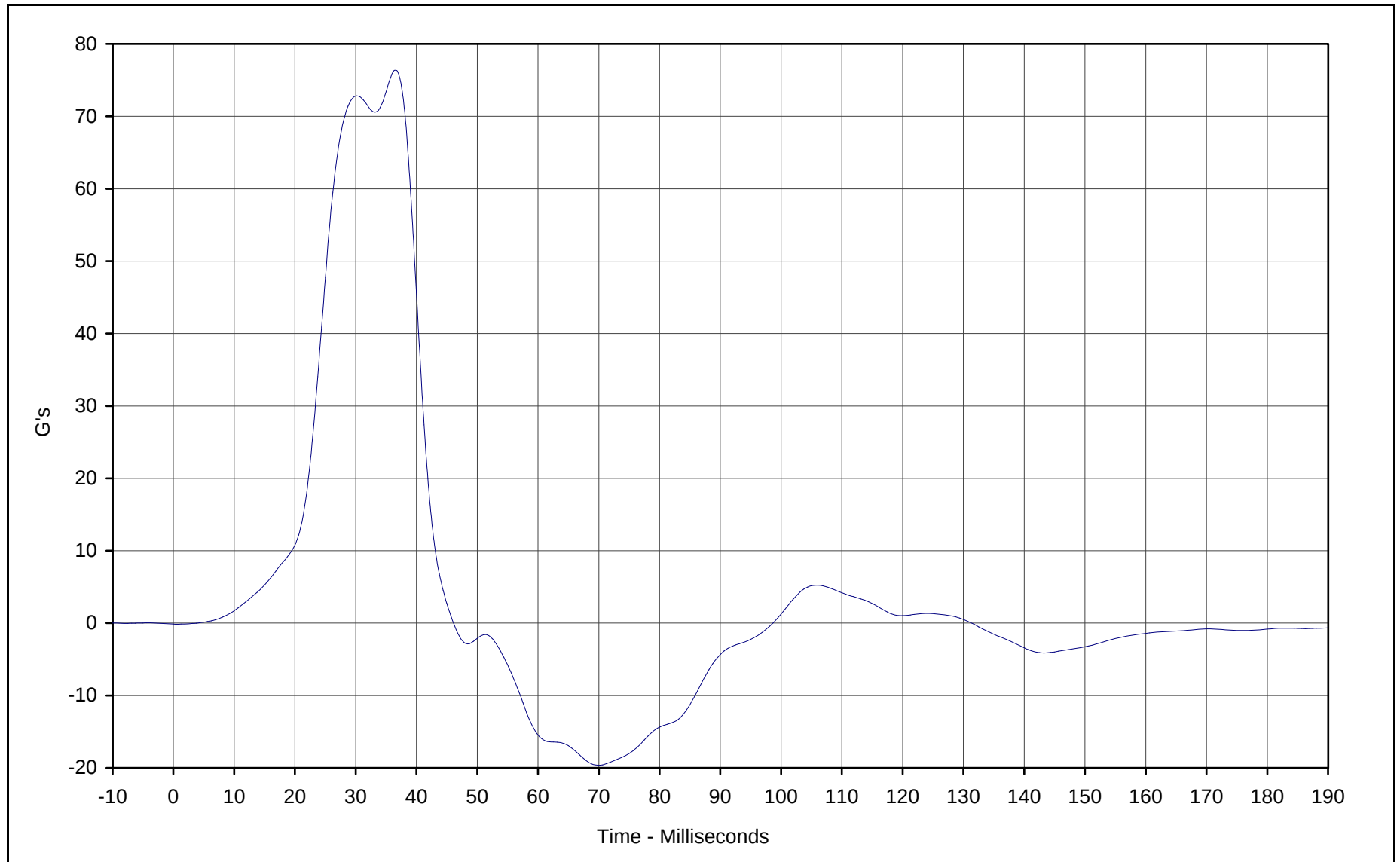




Curve Description: Pass. Lower Spine Primary Y
Maximum Value: 63.6 at 35.6 Milliseconds
Minimum Value: -24.3 at 65.0 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-019

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

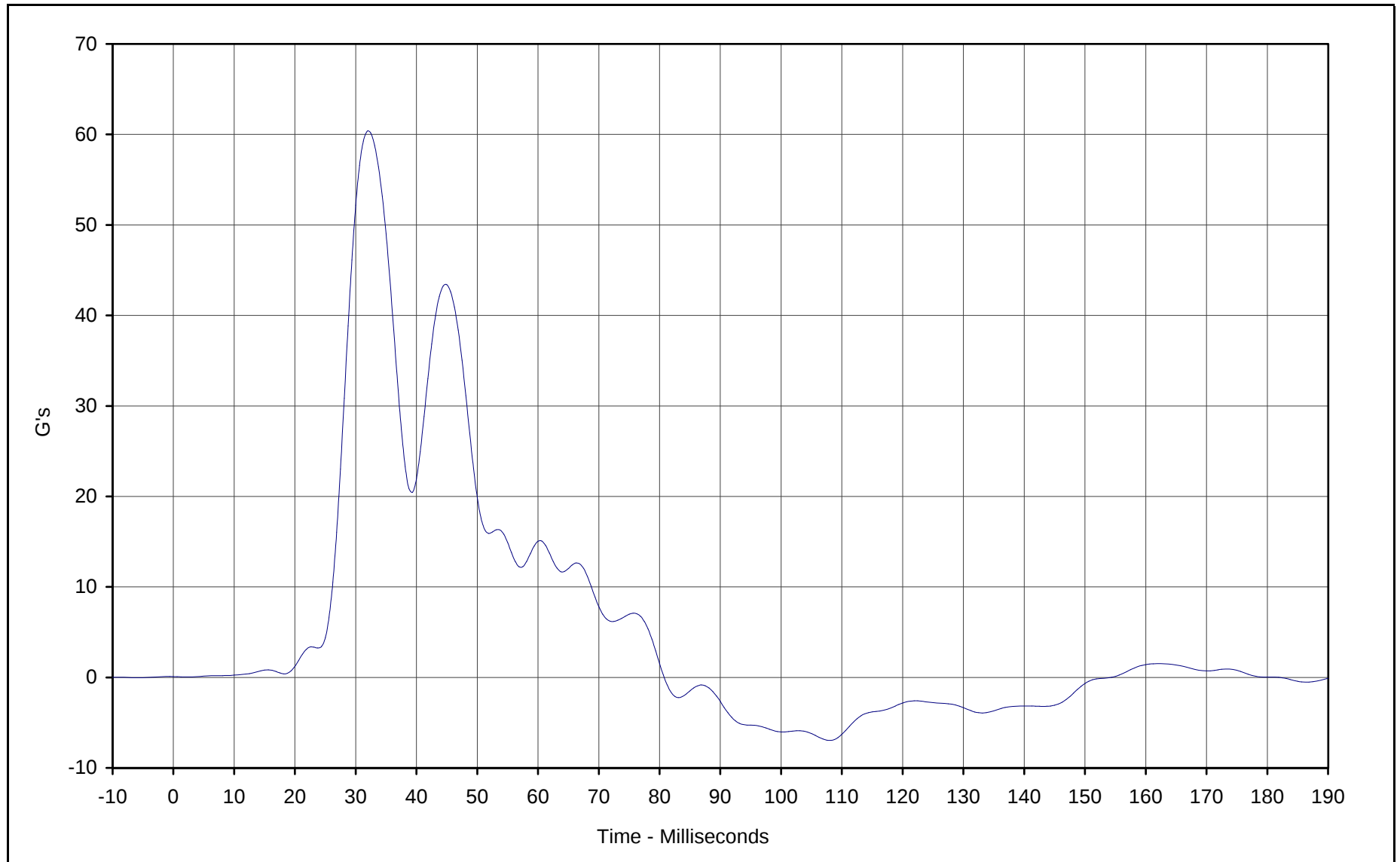




Curve Description: Pass. Pelvis Primary Y
Maximum Value: 76.3 at 36.3 Milliseconds
Minimum Value: -19.6 at 70.0 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-020

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

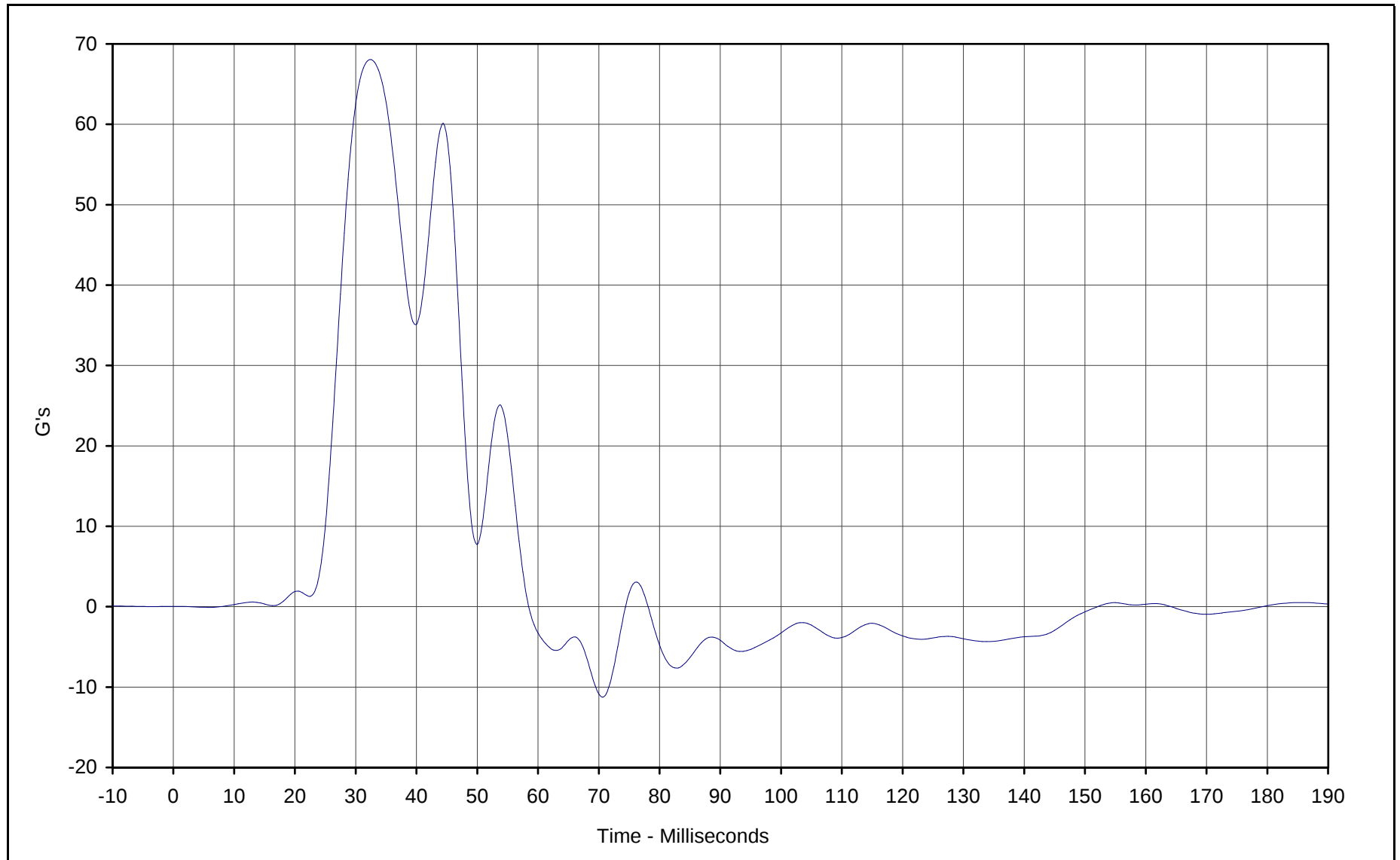




Curve Description: Pass. Upper Rib Redundant Y
Maximum Value: 60.4 at 31.9 Milliseconds
Minimum Value: -7.0 at 108.1 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-021

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

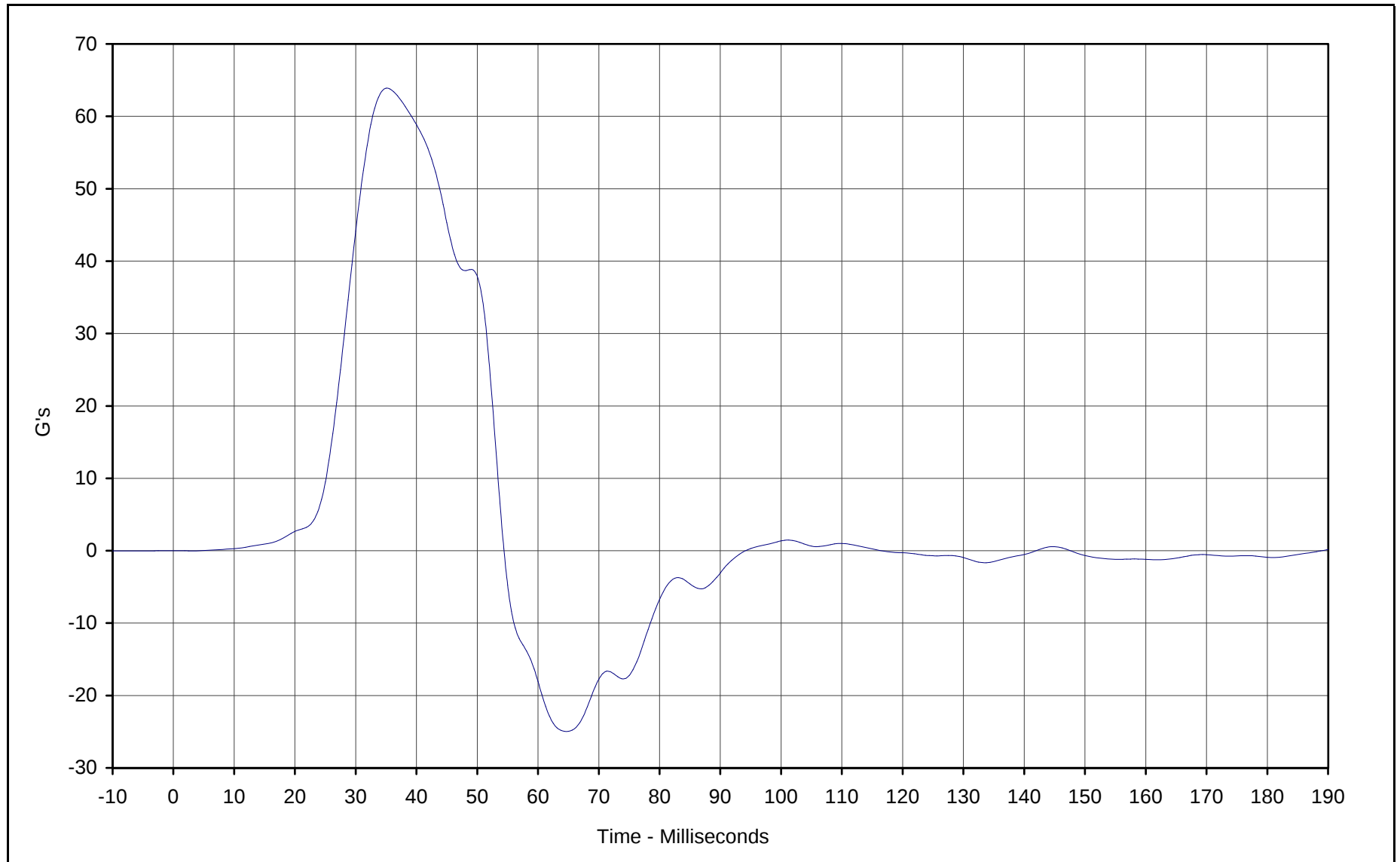




Curve Description: Pass. Lower Rib Redundant Y
Maximum Value: 68.1 at 32.5 Milliseconds
Minimum Value: -11.3 at 70.6 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-022

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan

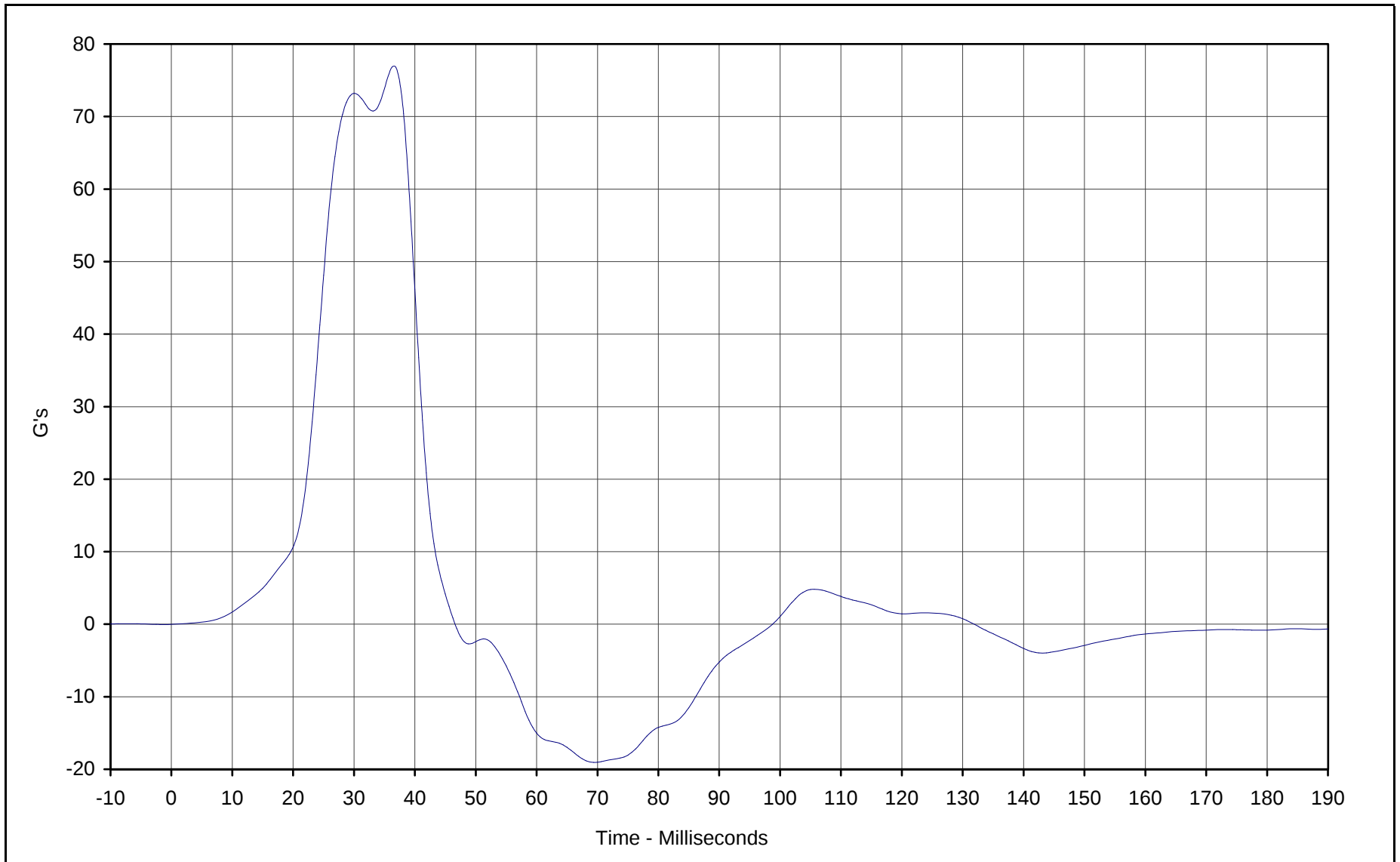




Curve Description: Pass. Lower Spine Redundant Y
Maximum Value: 63.9 at 35.0 Milliseconds
Minimum Value: -25.0 at 64.4 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-023

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan





Curve Description: Pass. Pelvis Redundant Y
Maximum Value: 76.8 at 36.3 Milliseconds
Minimum Value: -19.1 at 69.4 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01
Curve Number: FIR-024

Test Program: 55/28 km/h Side Impact NCAP No.: GM0006
Test Vehicle: 2002 Chevrolet Malibu 4 Door Sedan



APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA



Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	905	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	515	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	520	Pass
KV- Knee Pivot From Floor	mm	490 to 505	500	Pass
HW- Hip Width	mm	356 to 391	375	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: TI11C

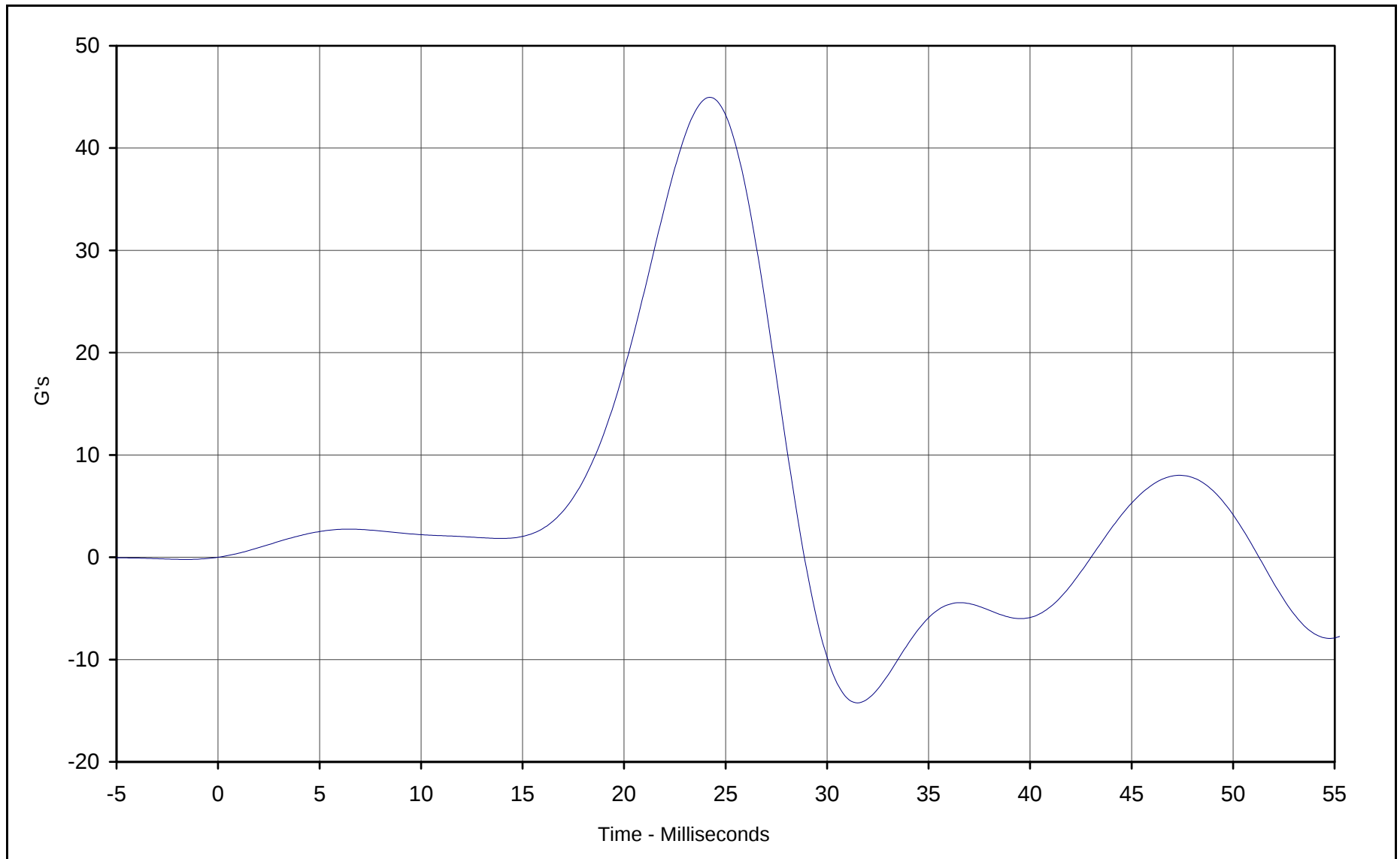
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	45.0	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	40.3	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	17.6	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-3



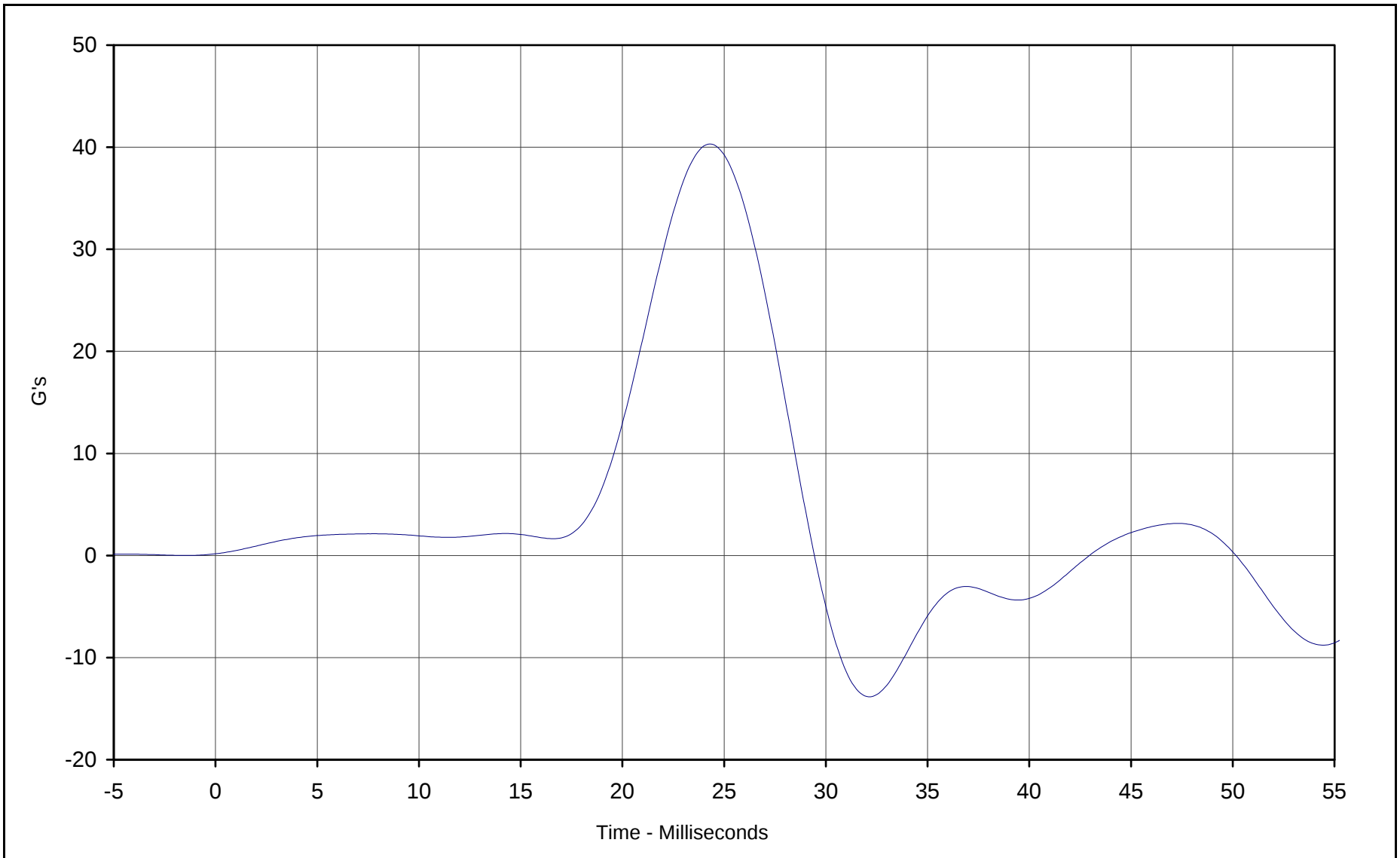
Curve Description: Left Upper Rib Y Acceleration
Maximum Value: 45.0 at 24.2 Milliseconds
Minimum Value: -14.2 at 31.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/15/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11C



KAR21113-01

C-4



Curve Description: Left Lower Rib Y Acceleration

Maximum Value: 40.3 at 24.3 Milliseconds

Minimum Value: -13.8 at 32.1 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/15/01

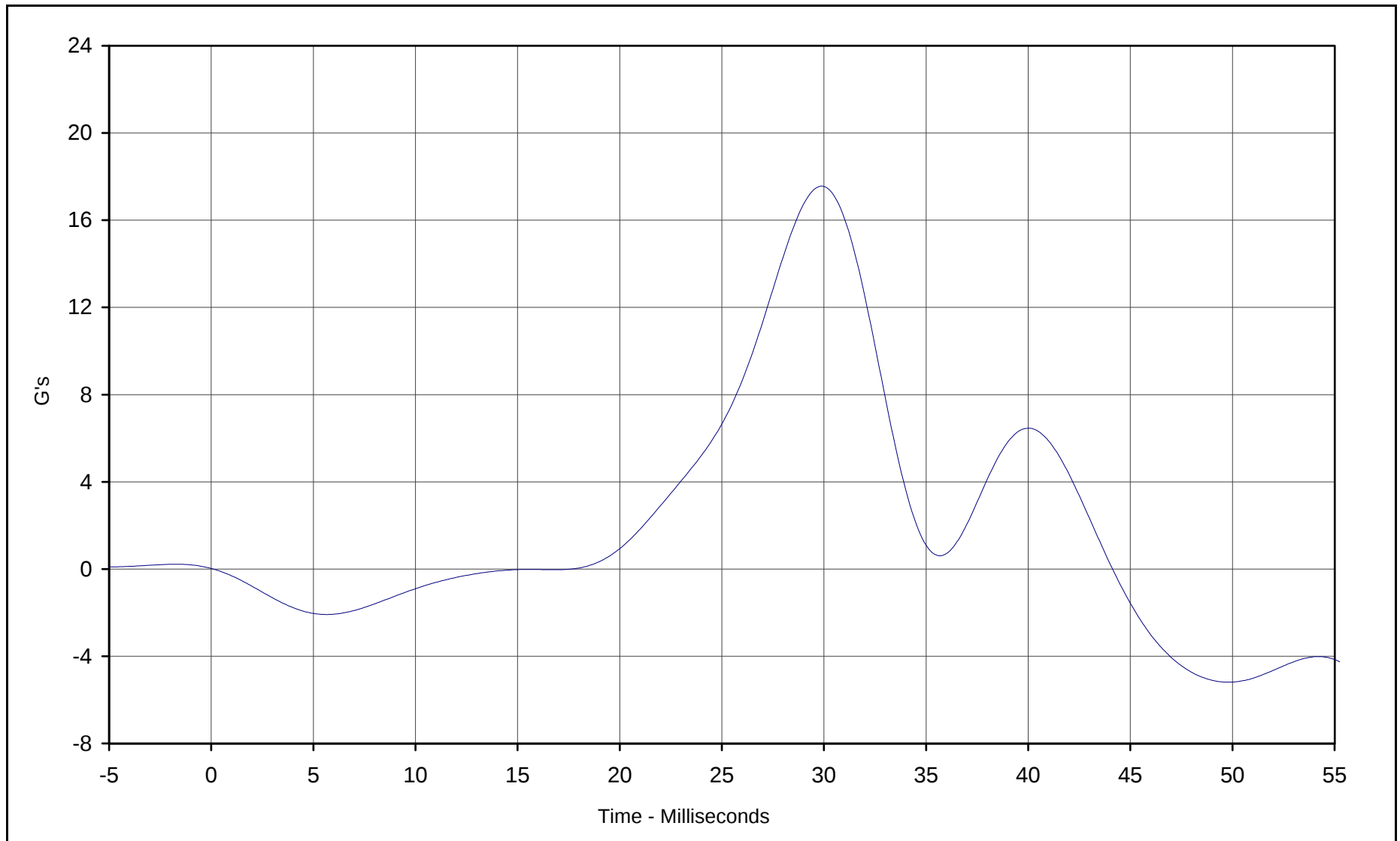
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 274 Test I.D.: TI11C



KAR21113-01

C-5



Curve Description: Lower Spine Y Acceleration
Maximum Value: 17.6 at 29.9 Milliseconds
Minimum Value: -7.2 at 59.6 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/15/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11C



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: PI11C

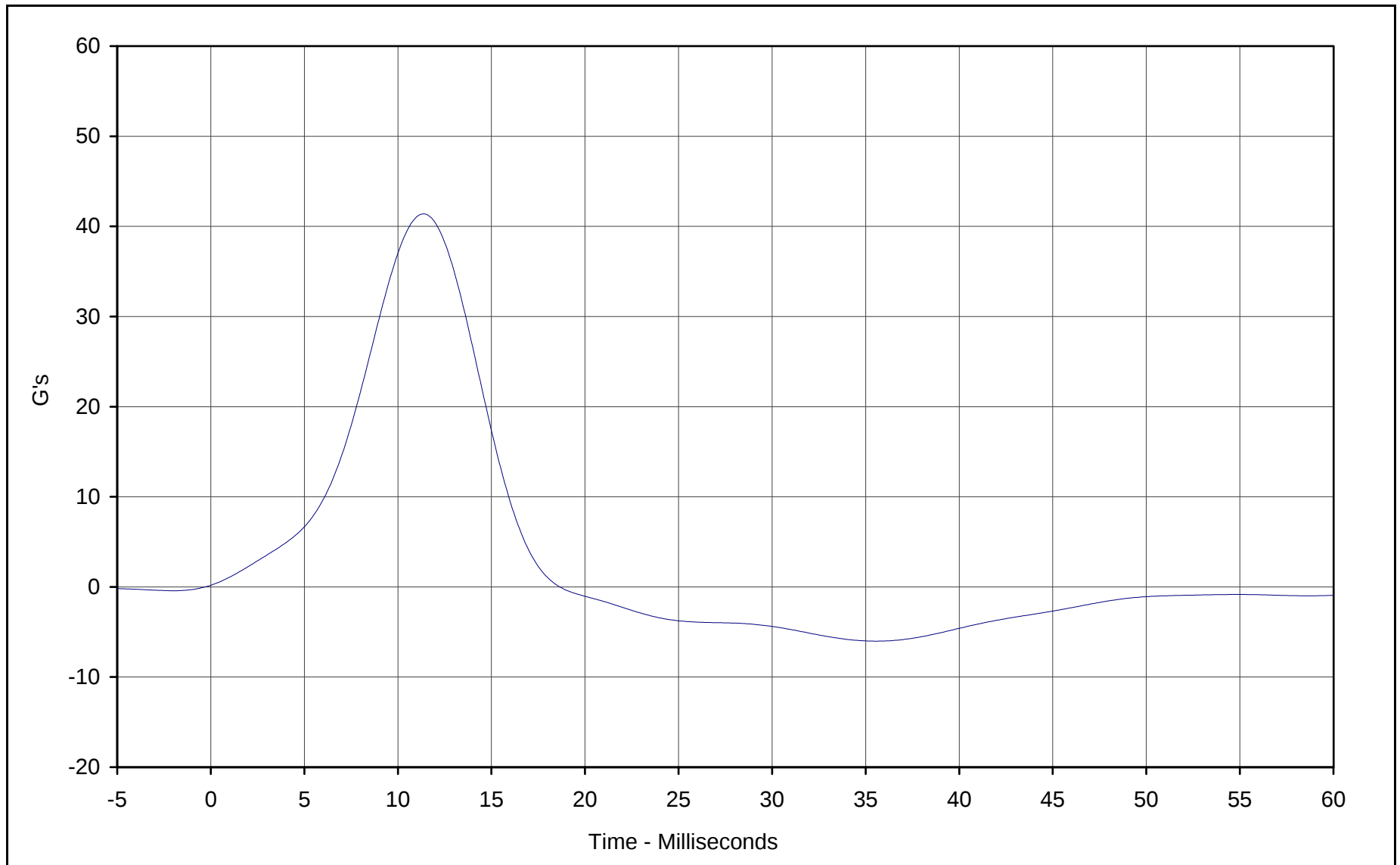
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	41.4	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	7.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-7



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 41.4 at 11.4 Milliseconds
Minimum Value: -6.0 at 35.6 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/15/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 274 Test I.D.: PI11C



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: AB11C

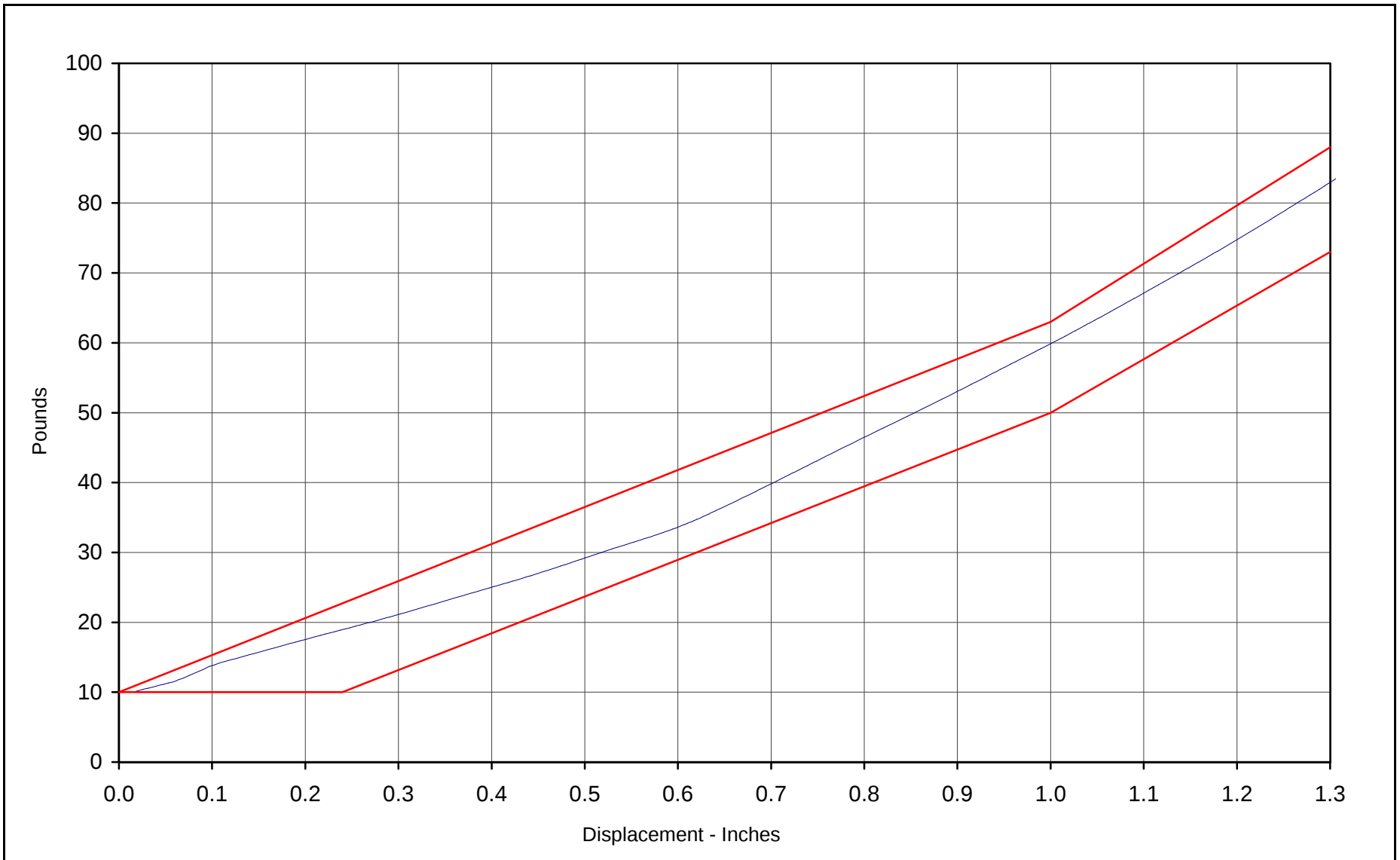
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	29.0	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	43.1	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	59.9	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	82.9	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-9

Curve Description: Abdomen Force vs. DisplacementForce at 0.5 In.: 29.0 PoundsForce at 0.75 In.: 43.1 PoundsForce at 1.0 In.: 59.9 PoundsForce at 1.3 In.: 82.9 PoundsDate of Test: 11/15/01Test Program: SID Abdominal CompressionTest Information: SID S/N: 274 Test I.D.: AB11C

KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: HD11C

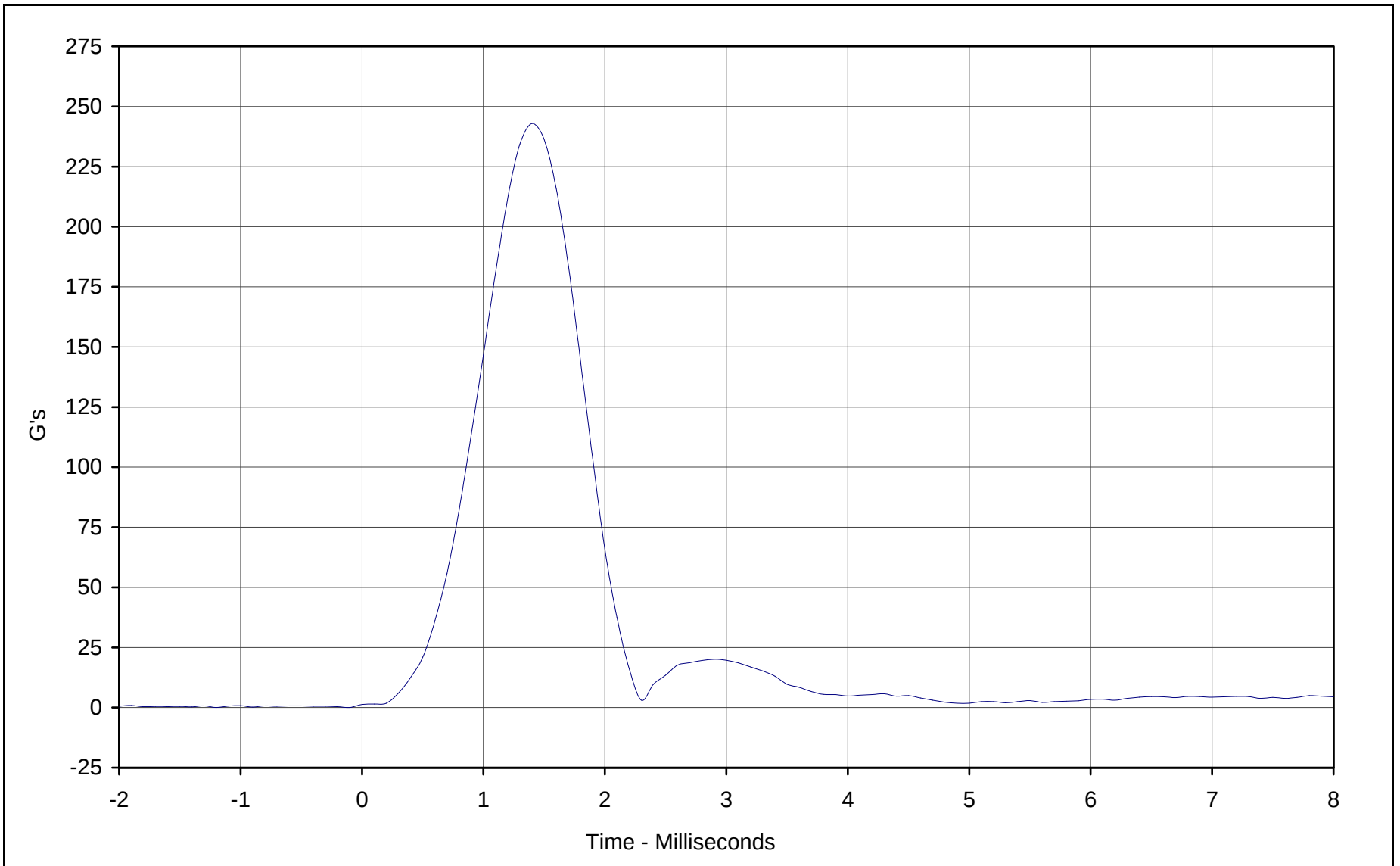
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	242.9	Pass
Peak Lateral Acceleration	G's	≤10.0	4.0	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.1	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-11



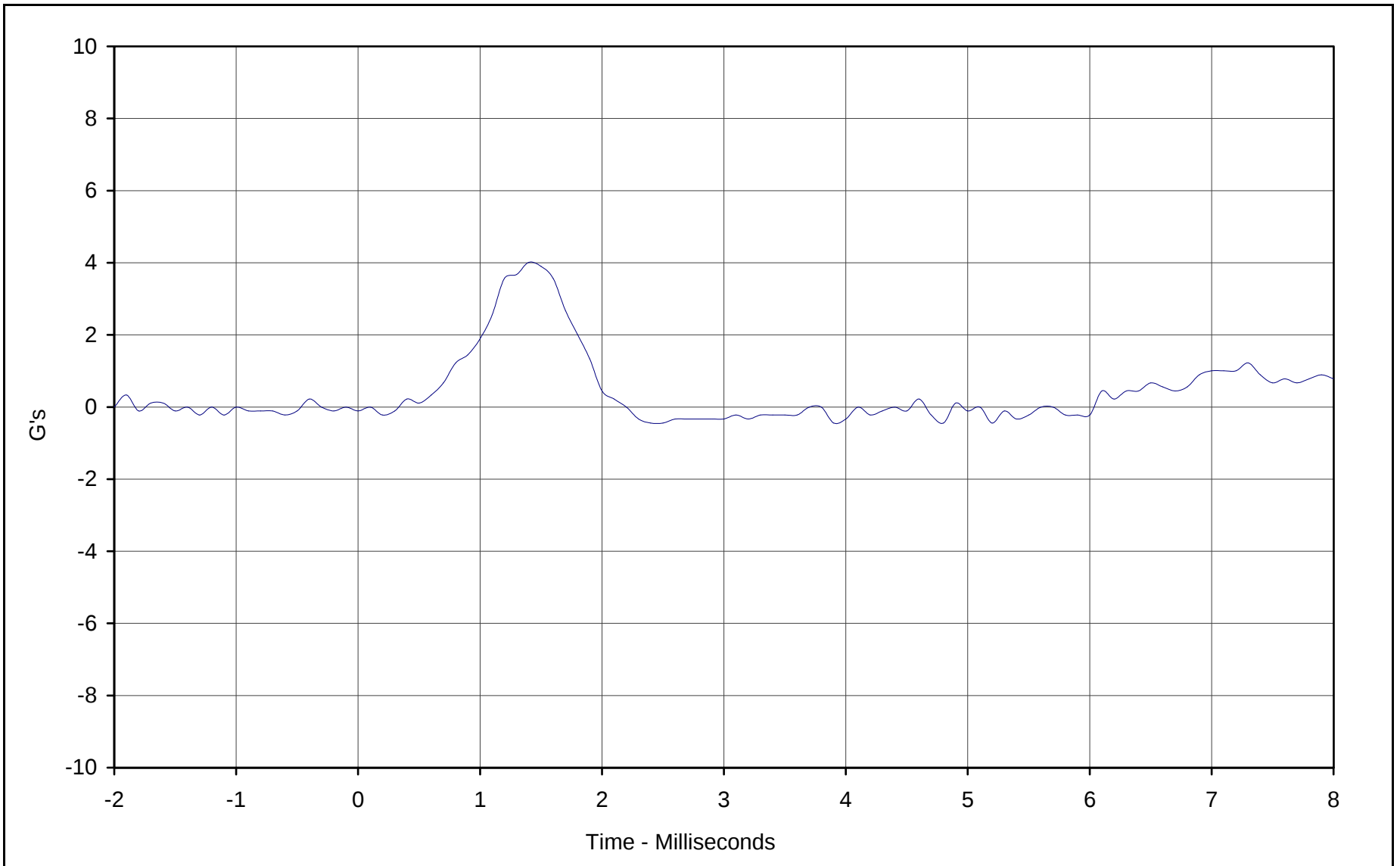
Curve Description: Head Resultant Acceleration
Maximum Value: 242.9 at 1.4 Milliseconds
Minimum Value: 1.3 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/15/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 274 Test I.D.: HD11C



KAR21113-01

C-12



Curve Description: Head Y Axis Acceleration
Maximum Value: 4.0 at 1.4 Milliseconds
Minimum Value: -0.4 at 2.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/15/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 274 Test I.D.: HD11C



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	895	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	510	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	385	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001
Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: TI11D

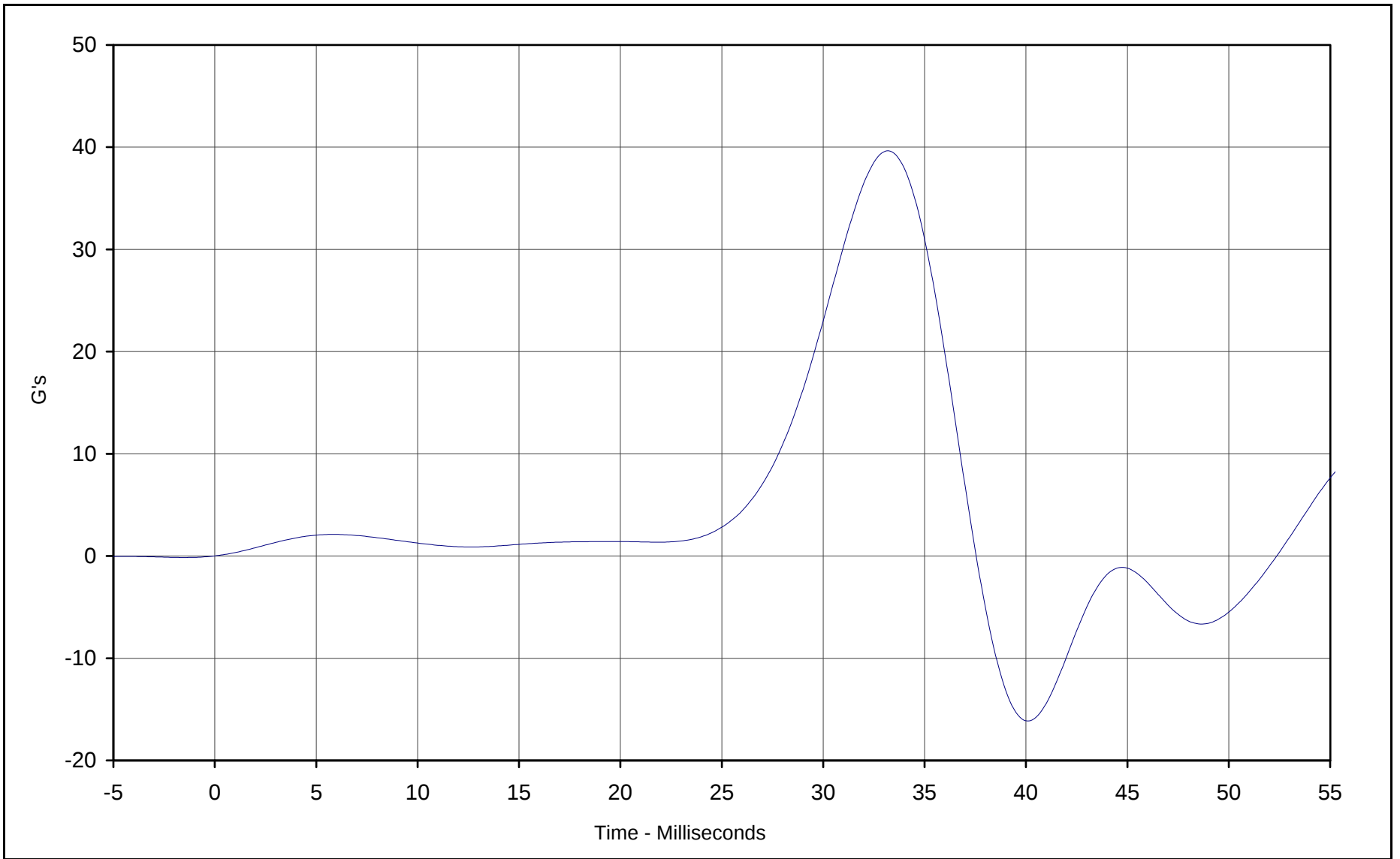
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	39.6	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	40.6	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	18.5	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-15



Curve Description: Left Upper Rib Y Acceleration

Maximum Value: 39.6 at 33.2 Milliseconds

Minimum Value: -16.1 at 40.1 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/15/01

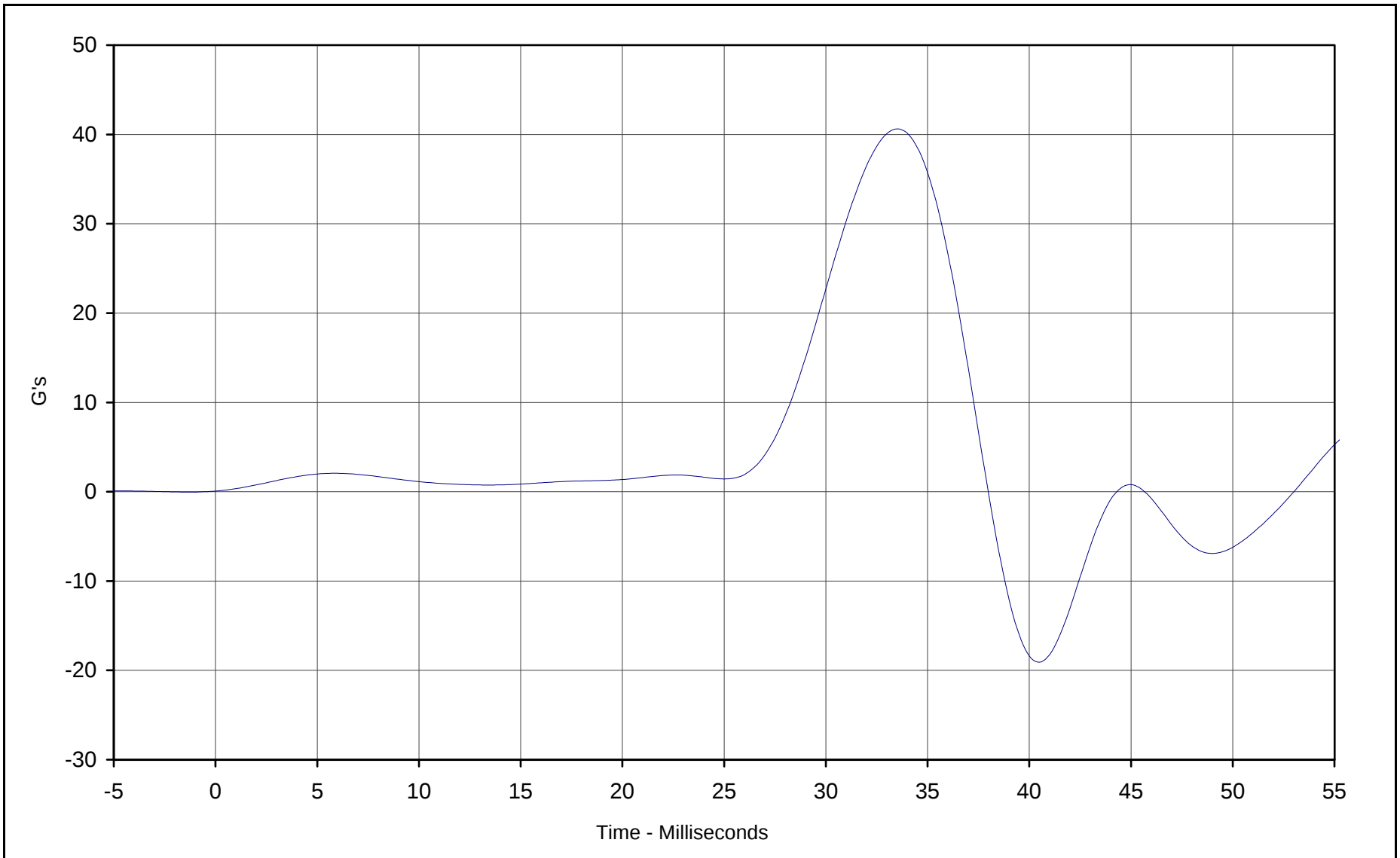
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 275 Test I.D.: TI11D



KAR21113-01

C-16



Curve Description: Left Lower Rib Y Acceleration

Maximum Value: 40.6 at 33.5 Milliseconds

Minimum Value: -19.1 at 40.5 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/15/01

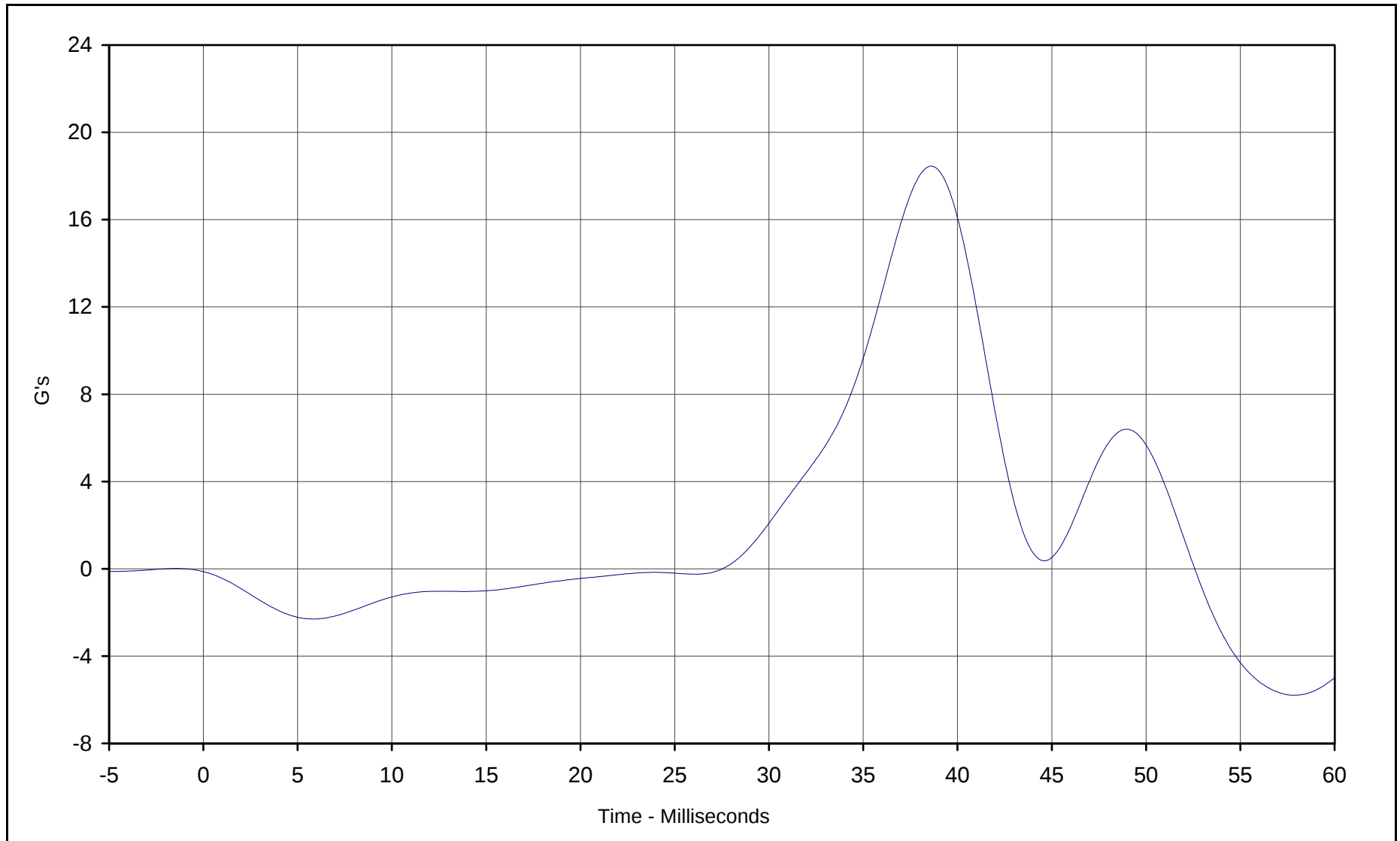
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 275 Test I.D.: TI11D



KAR21113-01

C-17



Curve Description: Lower Spine Y Acceleration
Maximum Value: 18.5 at 38.6 Milliseconds
Minimum Value: -5.8 at 57.9 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/15/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 275 Test I.D.: TI11D



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: PI11D

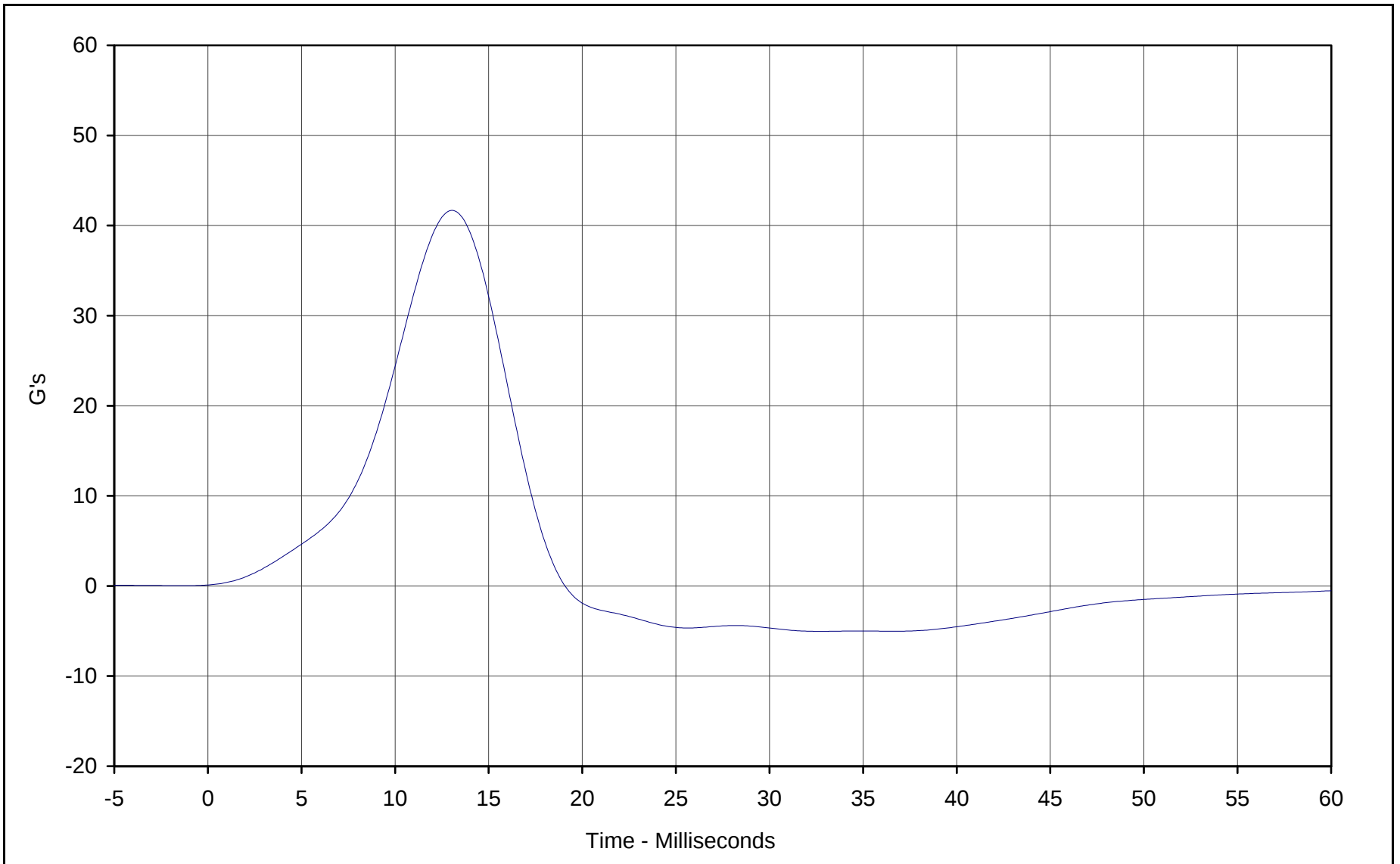
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	41.7	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	6.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-19



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 41.7 at 13.0 Milliseconds
Minimum Value: -5.0 at 32.8 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/15/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 275 Test I.D.: PI11D



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: AB11D

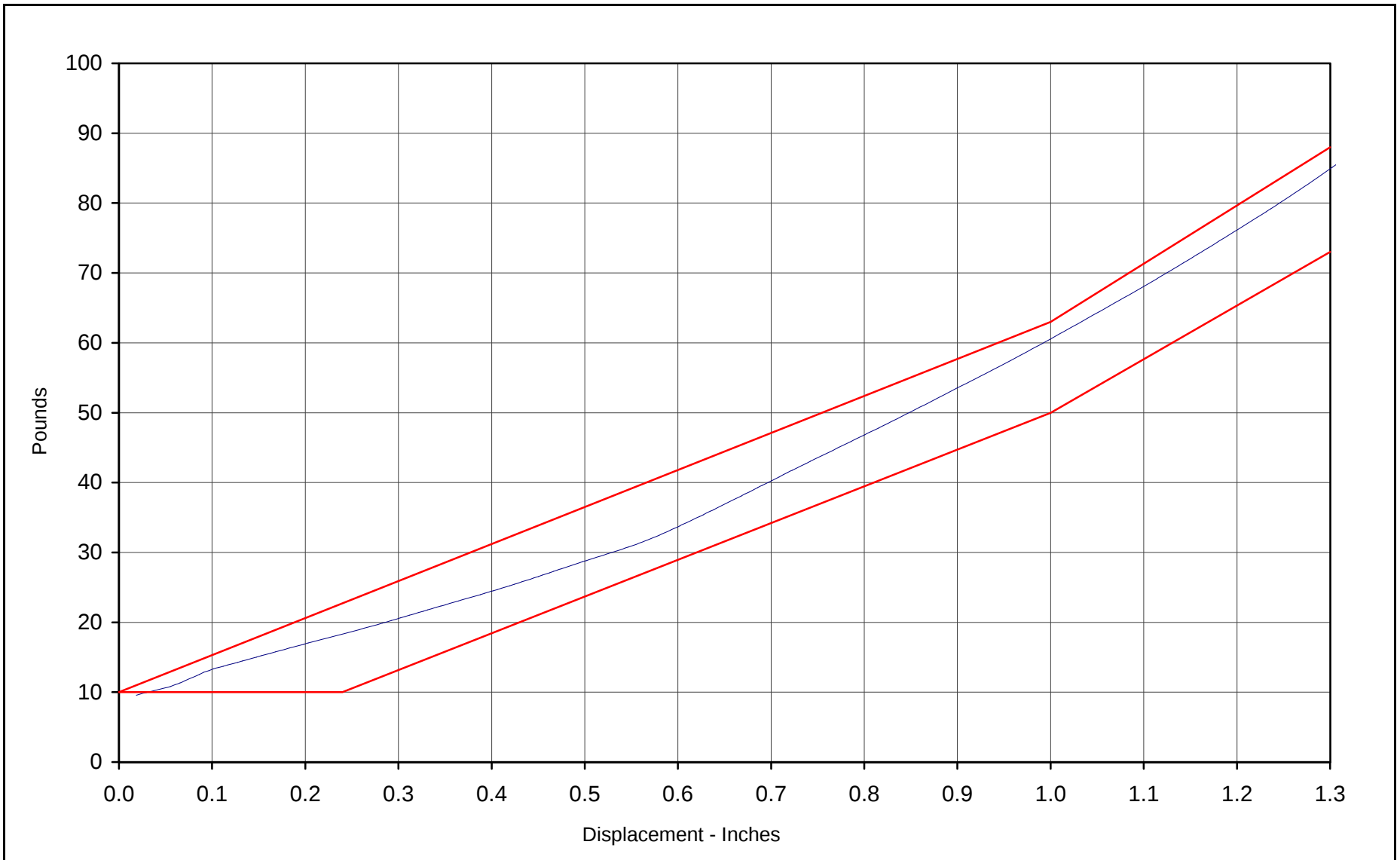
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	28.7	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	43.3	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	60.5	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	84.6	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-21



Curve Description: Abdomen Force vs. Displacement

Force at 0.5 In.: 28.7 Pounds

Force at 0.75 In.: 43.3 Pounds

Force at 1.0 In.: 60.5 Pounds

Force at 1.3 In.: 84.6 Pounds

Date of Test: 11/15/01

Test Program: SID Abdominal Compression

Test Information: SID S/N: 275 Test I.D.: AB11D



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: HD11D

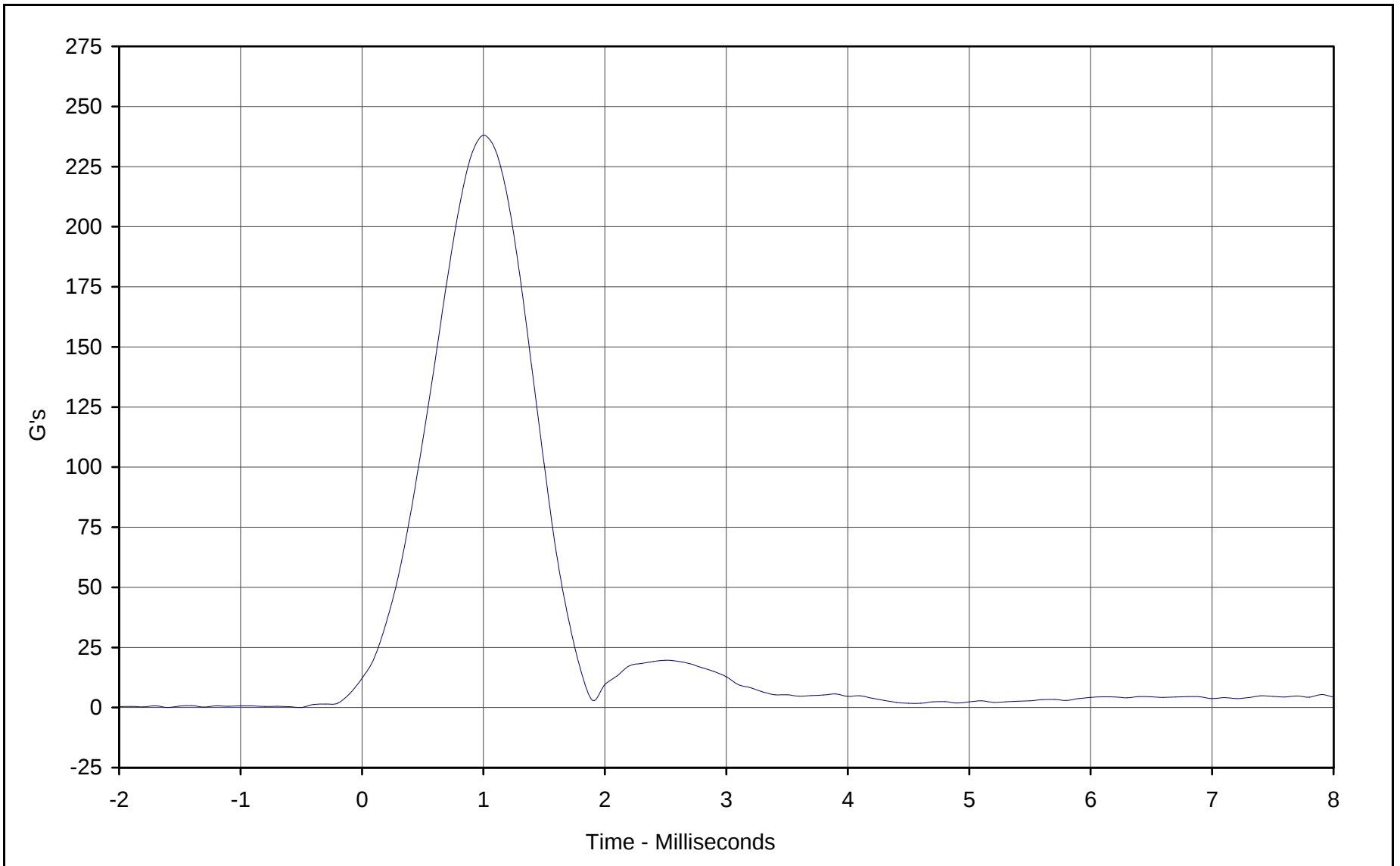
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	238.1	Pass
Peak Lateral Acceleration	G's	≤10.0	2.0	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.1	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 15, 2001

Test Date

C-23



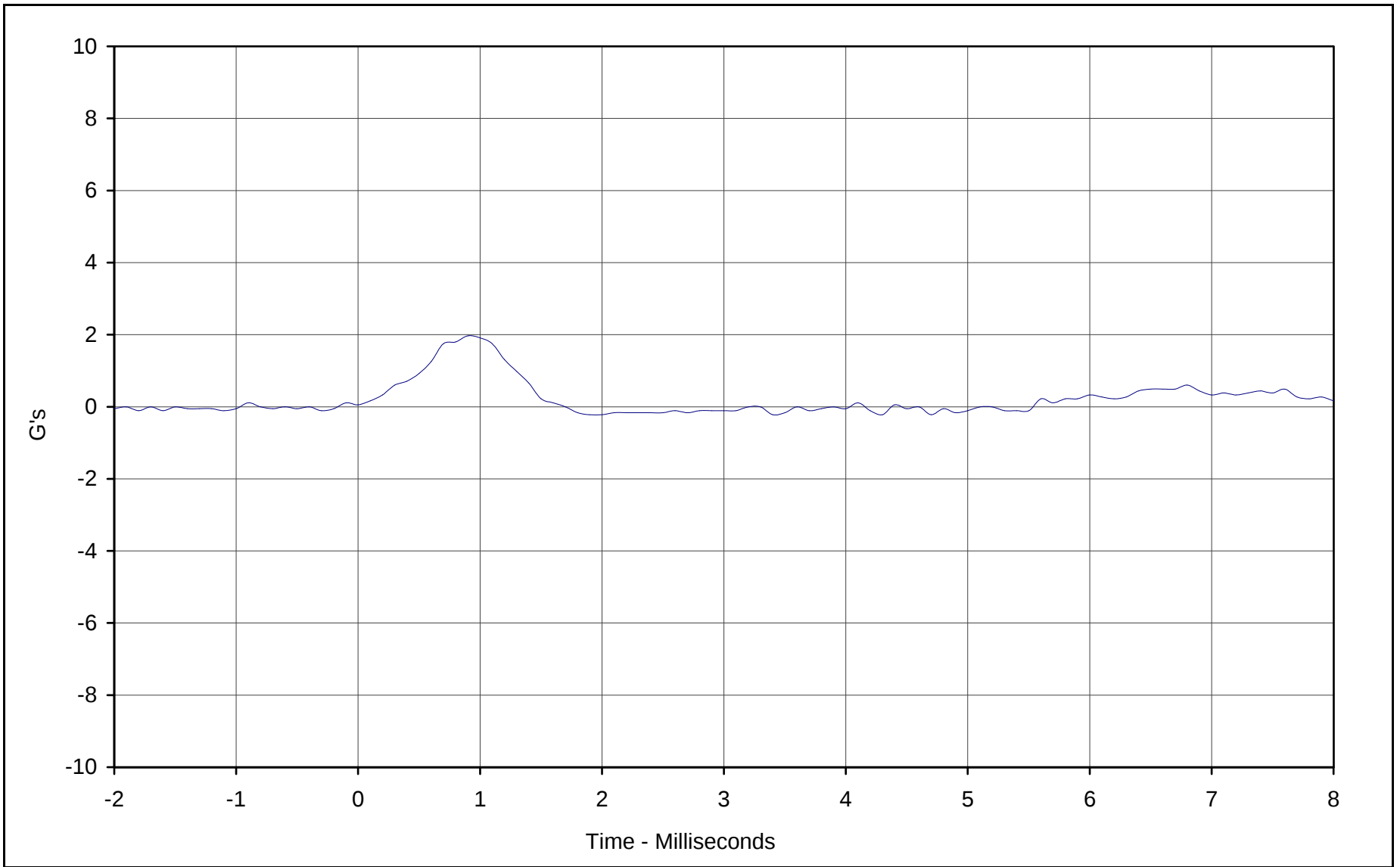
Curve Description: Head Resultant Acceleration
Maximum Value: 238.1 at 1.0 Milliseconds
Minimum Value: 1.8 at 4.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/15/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 275 Test I.D.: HD11D



KAR21113-01

C-24



Curve Description: Head Y Axis Acceleration
Maximum Value: 2.0 at 0.9 Milliseconds
Minimum Value: -0.2 at 1.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/15/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 275 Test I.D.: HD11D



KAR21113-01

APPENDIX C
POST-TEST SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA



Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	905	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	515	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	375	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: TI11E

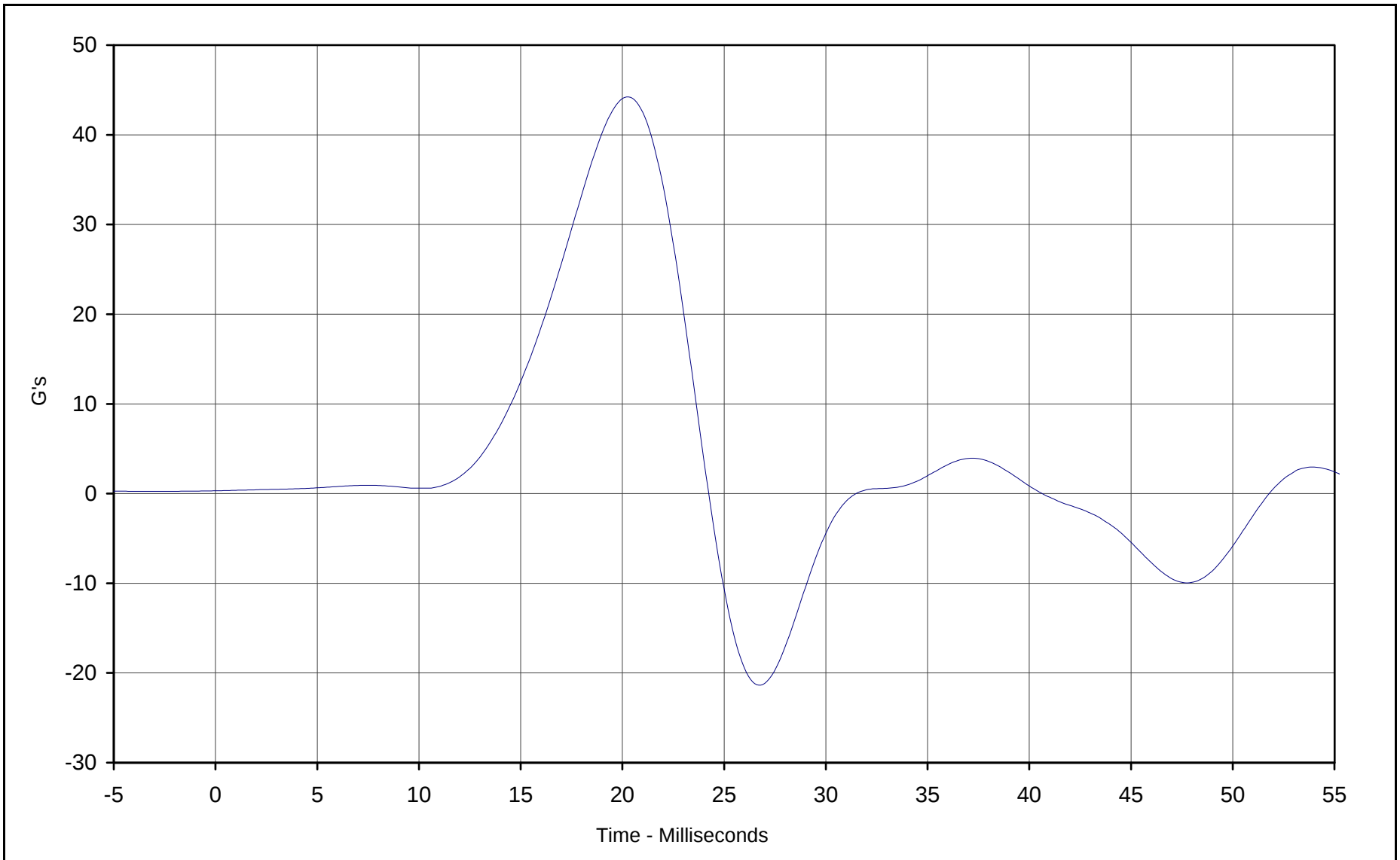
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	44.2	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	45.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.7	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-27



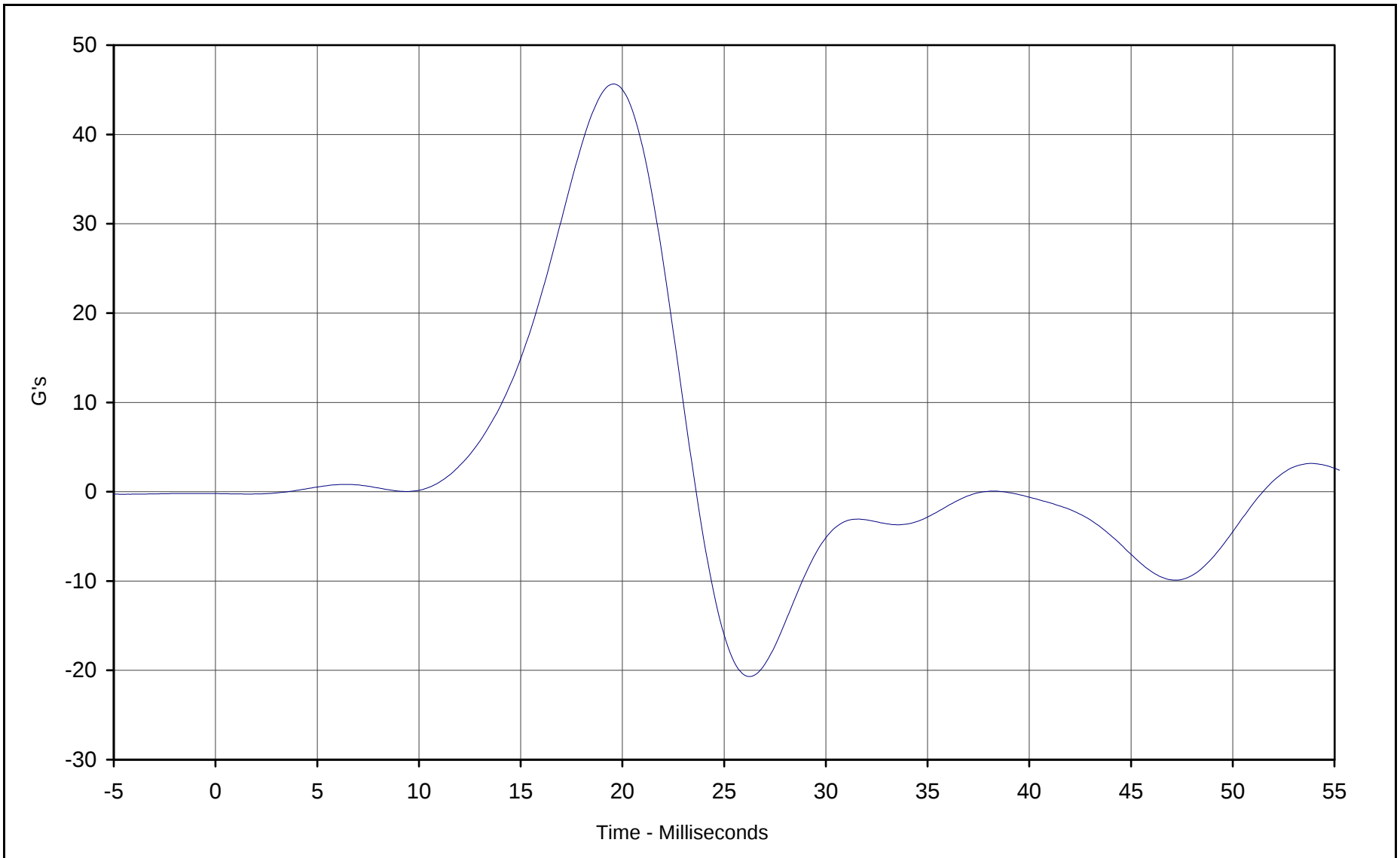
Curve Description: Left Upper Rib Y Acceleration
Maximum Value: 44.2 at 20.3 Milliseconds
Minimum Value: -21.4 at 26.7 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11E



KAR21113-01

C-28



Curve Description: Left Lower Rib Y Acceleration

Maximum Value: 45.7 at 19.6 Milliseconds

Minimum Value: -20.7 at 26.2 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/19/01

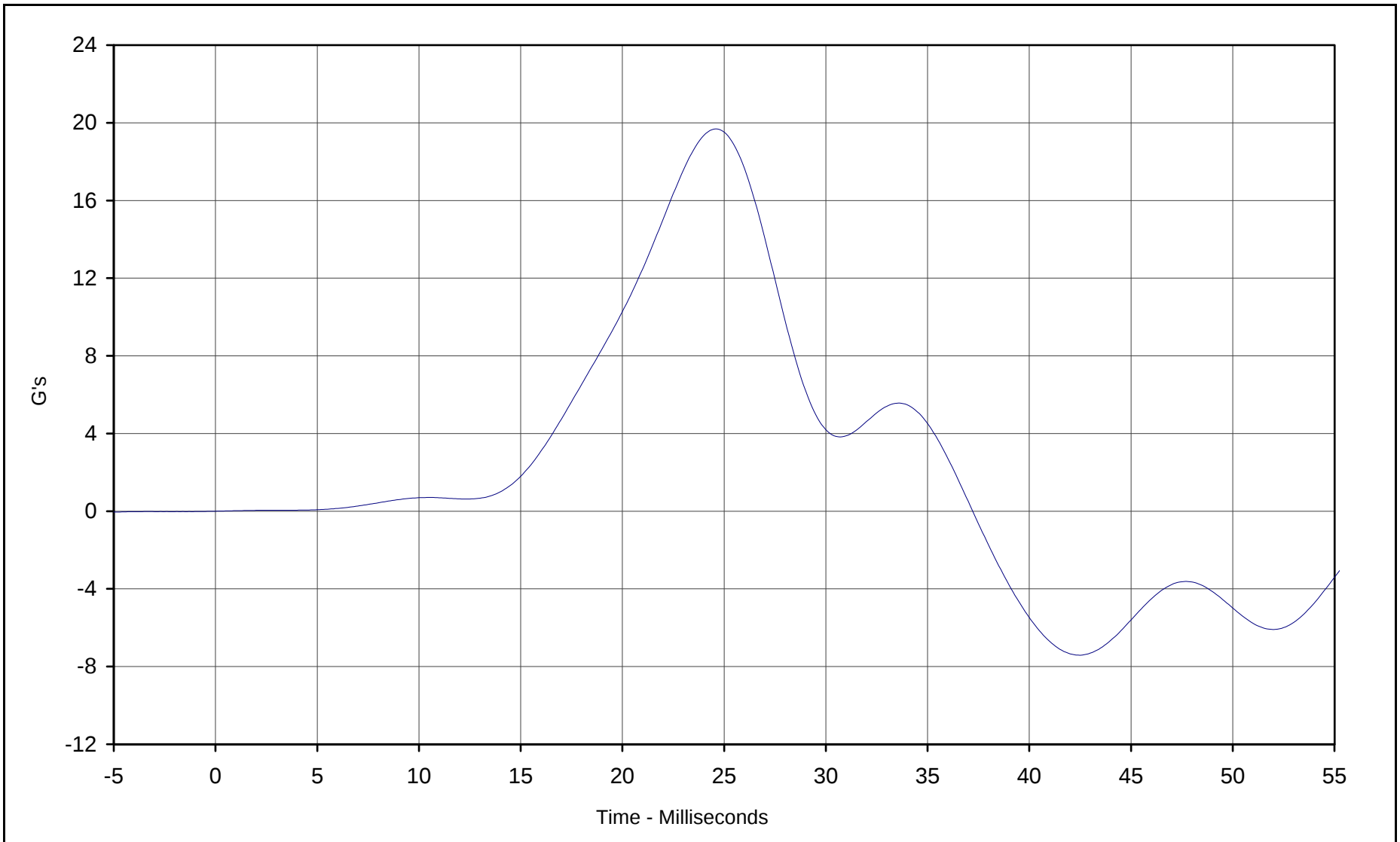
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 274 Test I.D.: TI11E



KAR21113-01

C-29



Curve Description: Lower Spine Y Acceleration
Maximum Value: 19.7 at 24.6 Milliseconds
Minimum Value: -7.4 at 42.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 274 Test I.D.: TI11E



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: TI11E

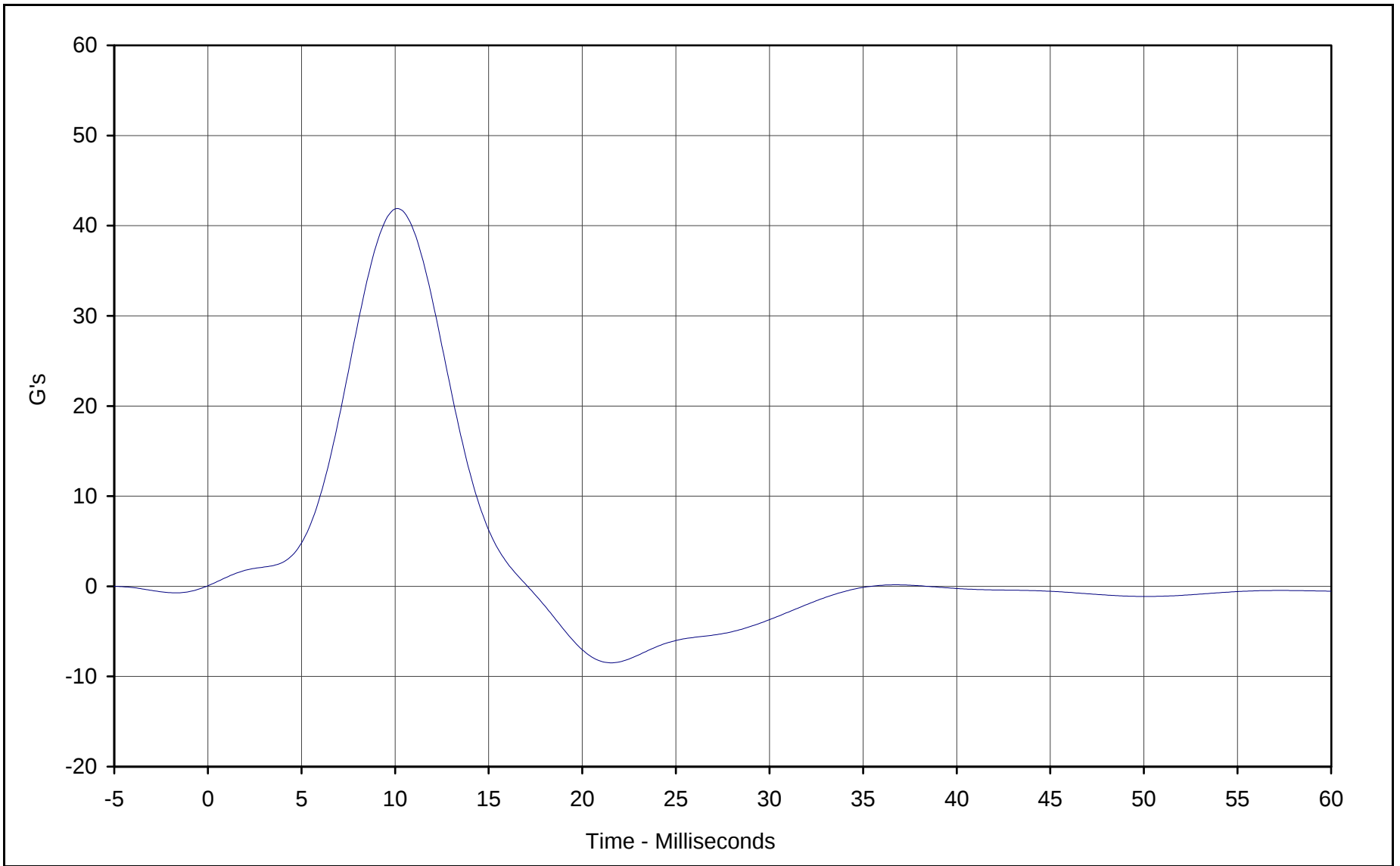
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	41.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	6.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-31



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 41.9 at 10.1 Milliseconds
Minimum Value: -8.5 at 21.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 274 Test I.D.: TI11E



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: AC11E

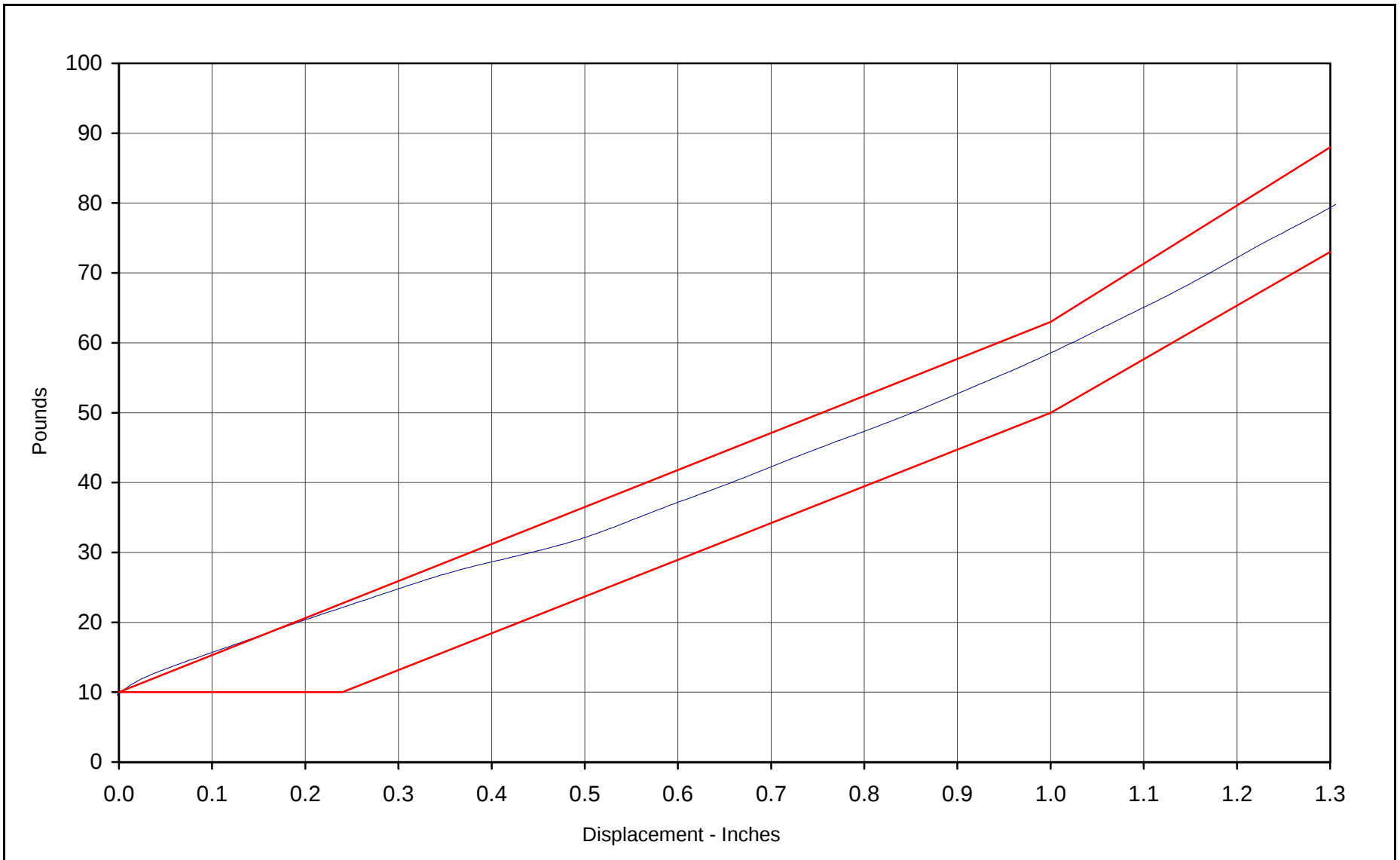
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	32.1	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	44.7	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	58.3	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	79.3	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-33

Curve Description: Abdomen Force vs. DisplacementForce at 0.5 In.: 32.1 PoundsForce at 0.75 In.: 44.7 PoundsForce at 1.0 In.: 58.3 PoundsForce at 1.3 In.: 79.3 PoundsDate of Test: 11/19/01Test Program: SID Abdominal CompressionTest Information: SID S/N: 274 Test I.D.: AC11E

KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 274

Part Serial No.: N/A

Test I.D.: HD11E

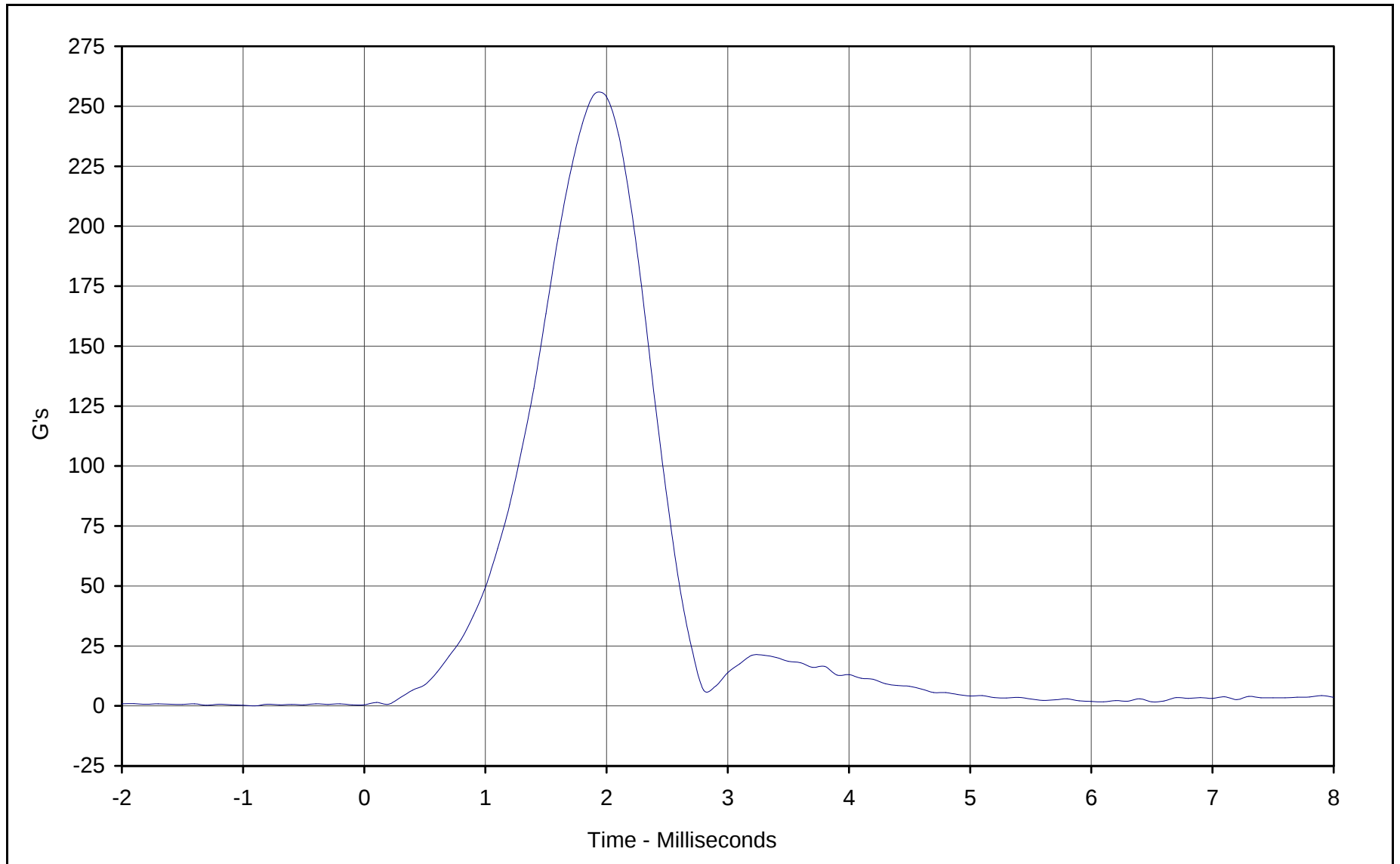
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	255.1	Pass
Peak Lateral Acceleration	G's	≤10.0	8.4	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.2	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-35

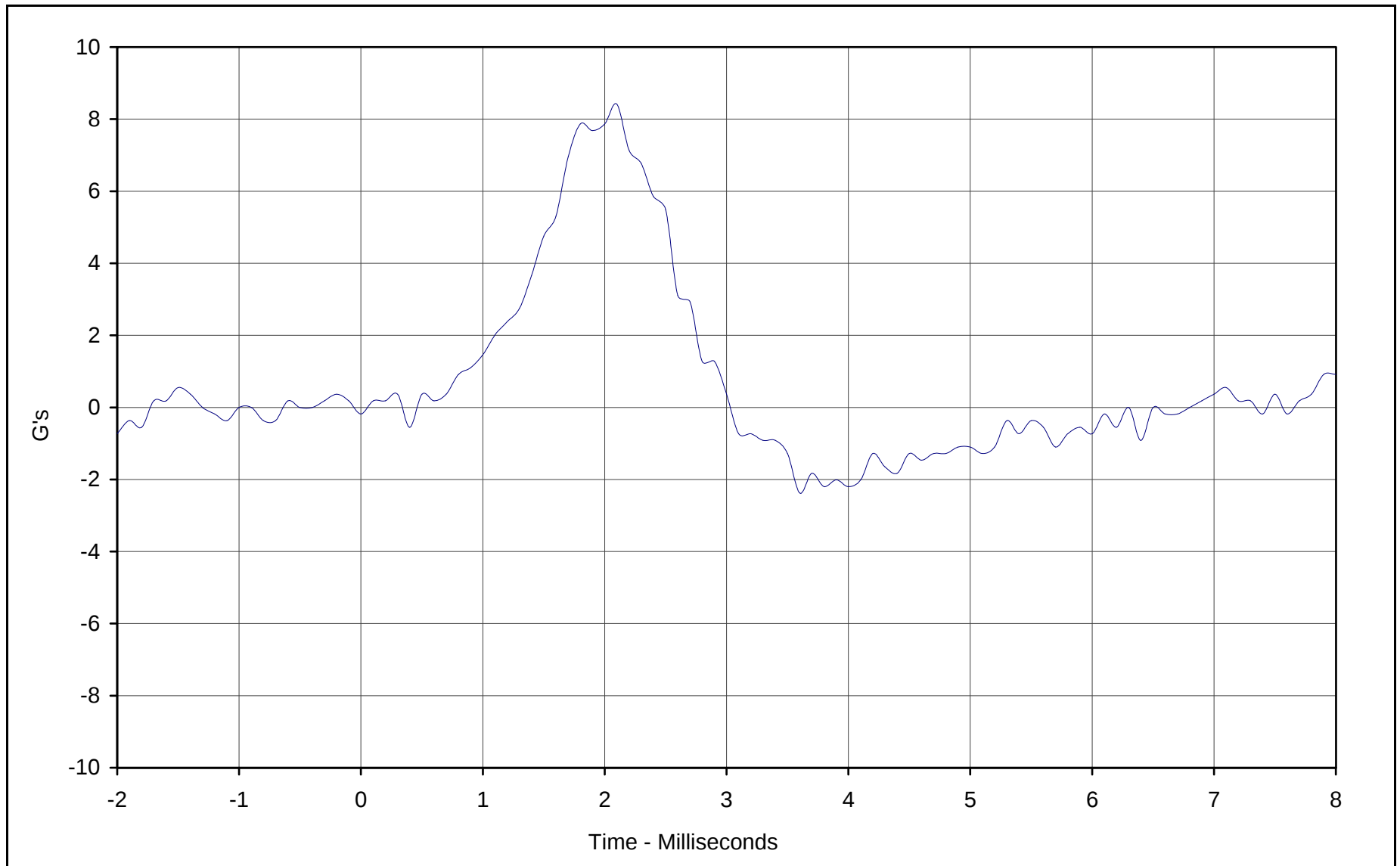


Curve Description: Head Resultant Acceleration
Maximum Value: 255.1 at 1.9 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 274 Test I.D.: HD11E



KAR21113-01



Curve Description: Head Y Axis Acceleration

Maximum Value:	8.4	at	2.1	Milliseconds
Minimum Value:	-2.4	at	3.6	Milliseconds
SAE Filter Class:	1000			
Date of Test:	11/19/01			

Test Program: SID Head Drop Calibration

Test Information: SID S/N: 274 Test I.D.: HD11E





Performance Verification Data Side Impact Dummy (SID) External Dimensions

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	895	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	510	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	520	Pass
KV- Knee Pivot From Floor	mm	490 to 505	500	Pass
HW- Hip Width	mm	356 to 391	380	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001
Test Date



Performance Verification Data Side Impact Dummy (SID) Thorax Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: TI11F

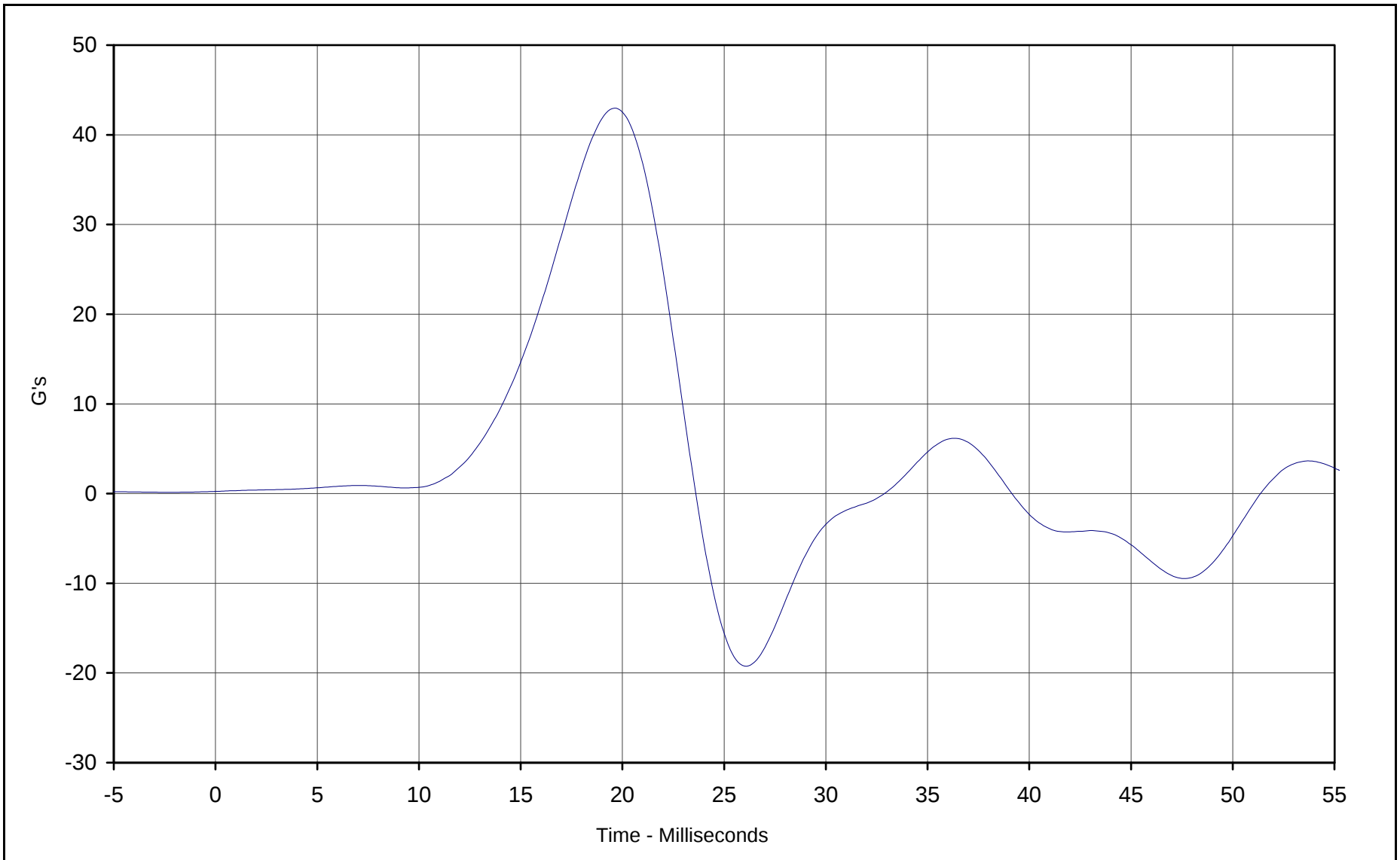
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Left Upper Rib Acceleration	G's	37.0 to 46.0	43.0	Pass
Left Lower Rib Acceleration	G's	37.0 to 46.0	44.0	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.5	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-39



Curve Description: Left Upper Rib Y Acceleration

Maximum Value: 43.0 at 19.6 Milliseconds

Minimum Value: -19.3 at 26.1 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/19/01

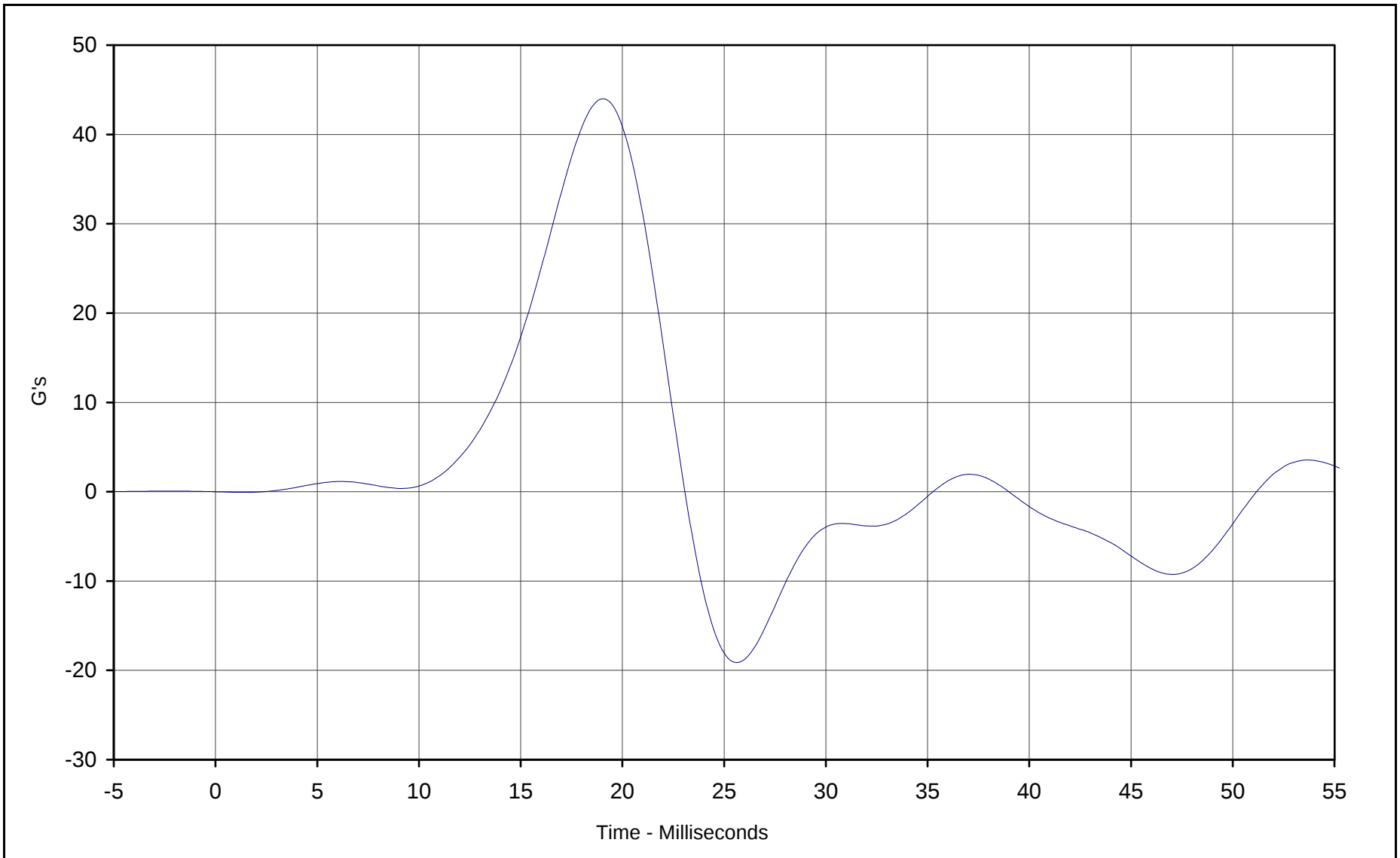
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 275 Test I.D.: TI11F



KAR21113-01

C-40



Curve Description: Left Lower Rib Y Acceleration

Maximum Value: 44.0 at 19.1 Milliseconds

Minimum Value: -19.1 at 25.6 Milliseconds

SAE Filter Class: FIR 100

Date of Test: 11/19/01

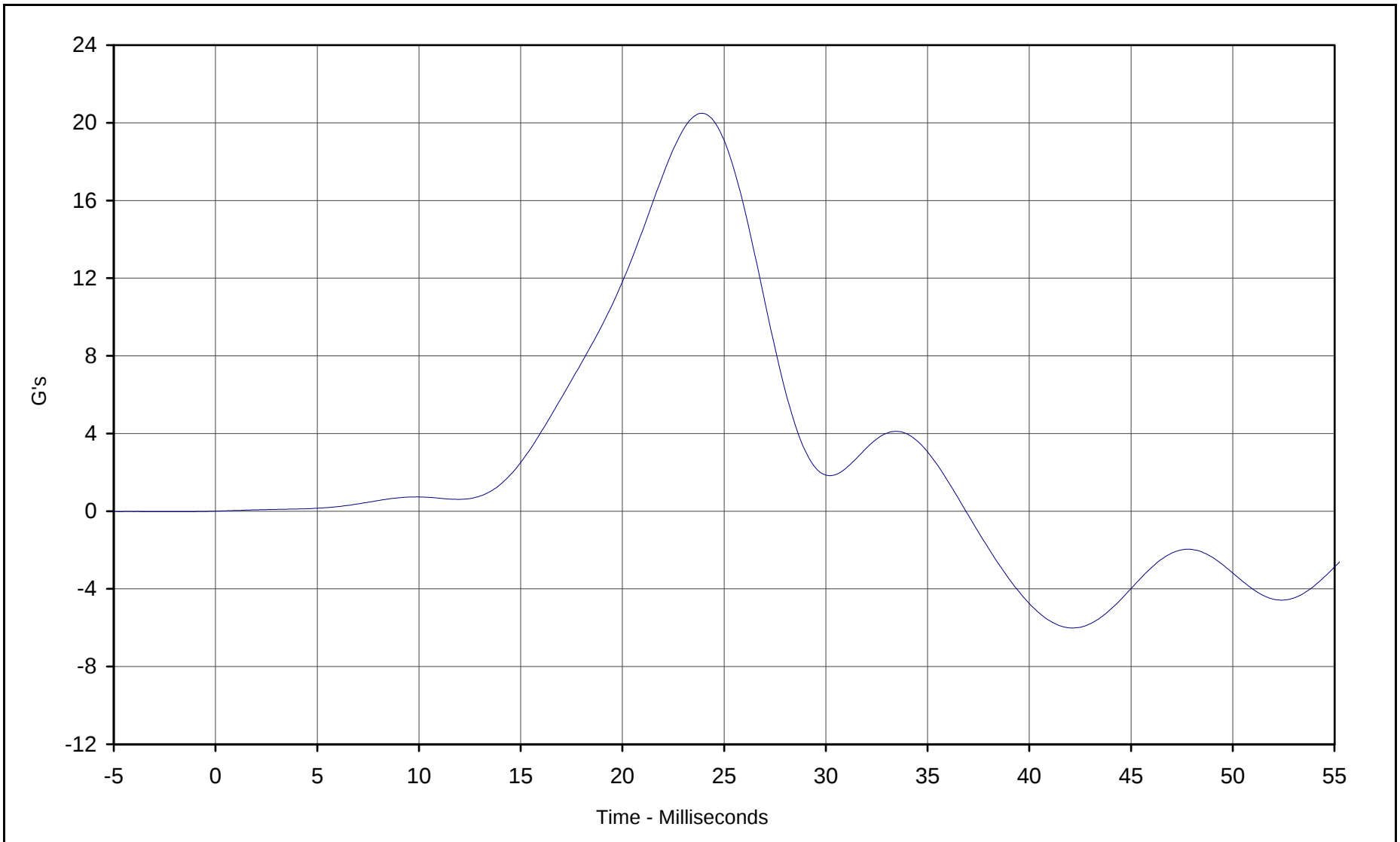
Test Program: SID Thorax Lateral Impact Test

Test Information: SID S/N: 275 Test I.D.: TI11F



KAR21113-01

C-41



Curve Description: Lower Spine Y Acceleration
Maximum Value: 20.5 at 23.9 Milliseconds
Minimum Value: -6.0 at 42.1 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Thorax Lateral Impact Test
Test Information: SID S/N: 275 Test I.D.: TI11F



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Left Side Pelvis Lateral Impact

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: PI11F

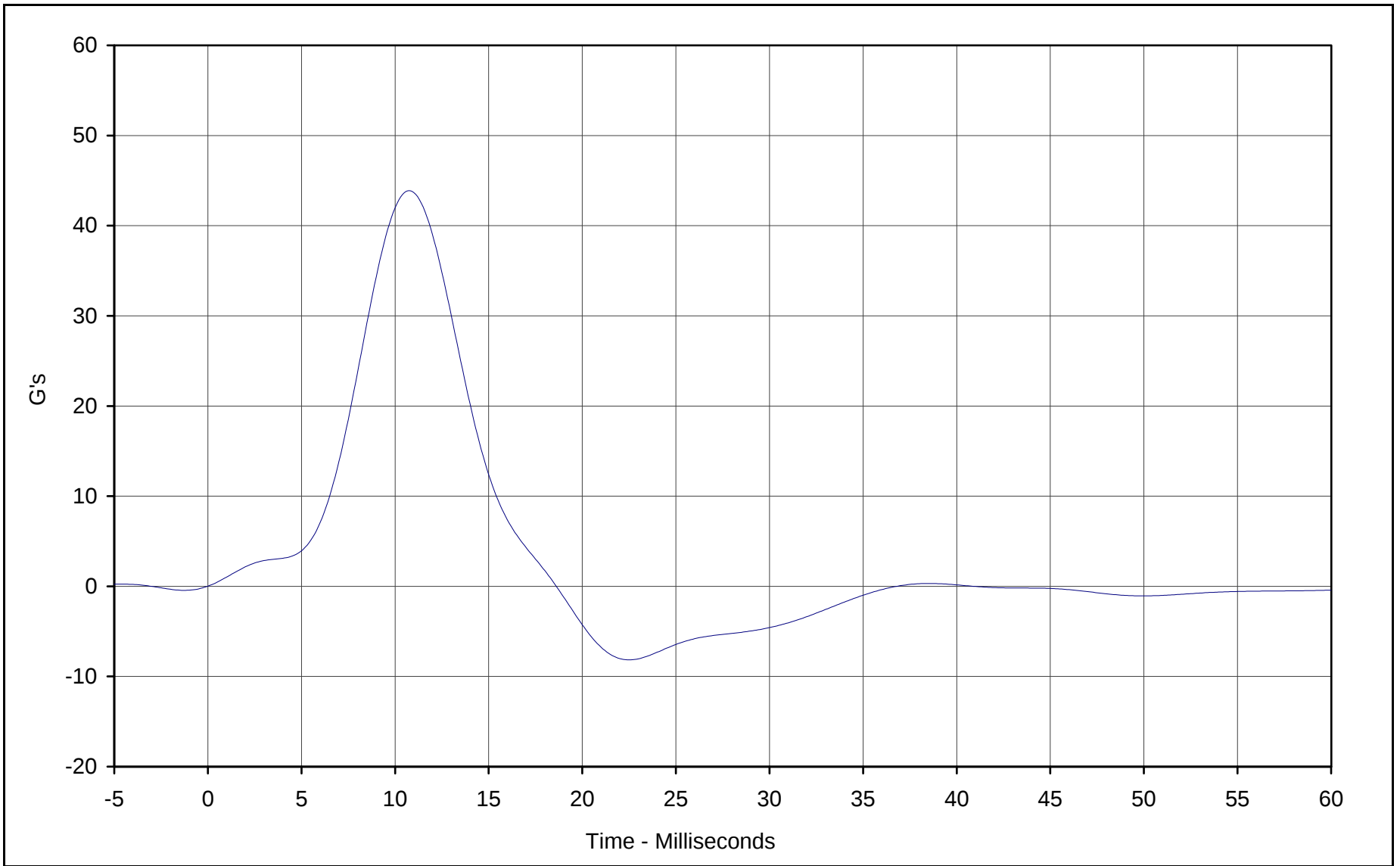
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Pelvis Acceleration	G's	40.0 to 60.0	43.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0 Msec.	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-43



Curve Description: Pelvis Y Axis Acceleration
Maximum Value: 43.9 at 10.8 Milliseconds
Minimum Value: -8.2 at 22.5 Milliseconds
SAE Filter Class: FIR 100
Date of Test: 11/19/01

Test Program: SID Left Side Pelvis Lateral Impact
Test Information: SID S/N: 275 Test I.D.: PI11F



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Abdominal Compression Test

ATD Serial No.: 275

Part Serial No.: N/A

Test I.D.: AC11F

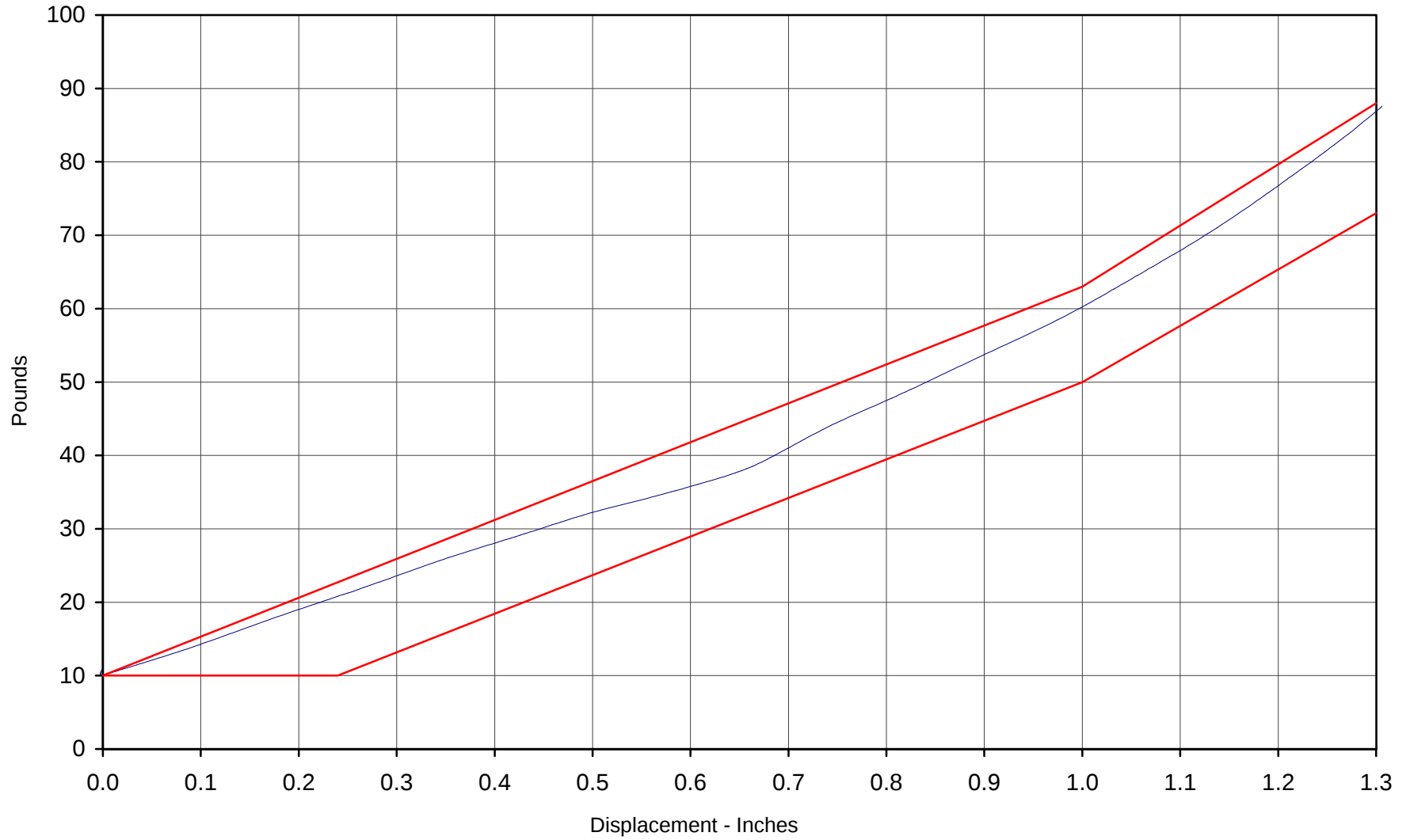
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Force at 0.5 Inches of Displacement	Pounds	23.0 to 36.0	32.2	Pass
Force at 0.75 Inches of Displacement	Pounds	36.0 to 50.0	44.4	Pass
Force at 1.0 Inches of Displacement	Pounds	50.0 to 63.0	60.2	Pass
Force at 1.3 Inches of Displacement	Pounds	73.0 to 88.0	86.8	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001

Test Date

C-45



Curve Description: Abdomen Force vs. Displacement

Force at 0.5 In.: 32.2 Pounds

Force at 0.75 In.: 44.4 Pounds

Force at 1.0 In.: 60.2 Pounds

Force at 1.3 In.: 86.8 Pounds

Date of Test: 11/19/01

Test Program: SID Abdominal Compression

Test Information: SID S/N: 275 Test I.D.: AC11F



KAR21113-01



Performance Verification Data Side Impact Dummy (SID) Head Drop Calibration

ATD Serial No.: 275

Part Serial No.: N/A

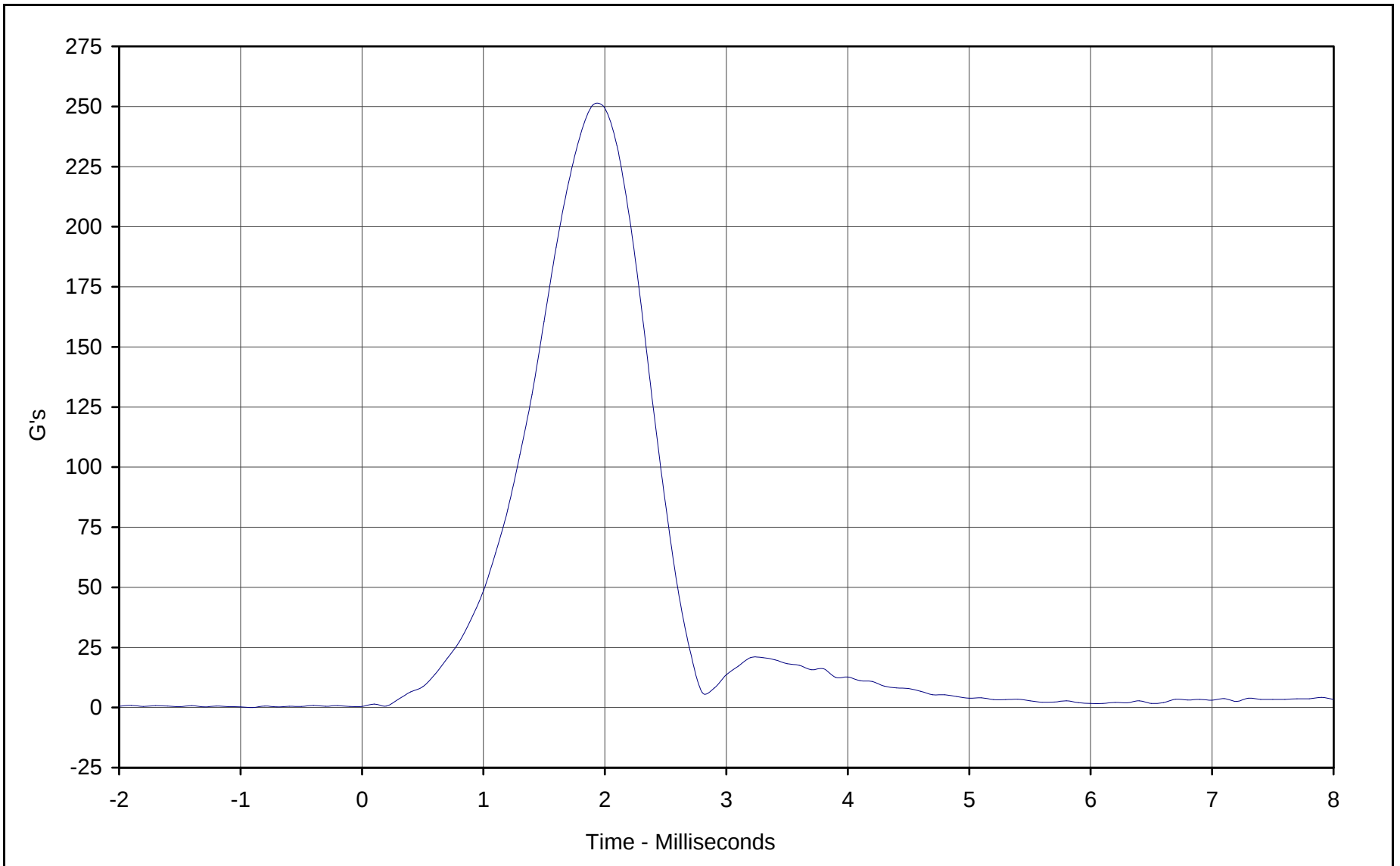
Test I.D.: HD11F

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°F	66 to 78	70	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	210.0 to 260.0	250.5	Pass
Peak Lateral Acceleration	G's	≤10.0	3.1	Pass
Time Above 100 G's	Msec.	0.9 to 1.5	1.2	Pass
Is Resultant Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 19, 2001
Test Date

C-47



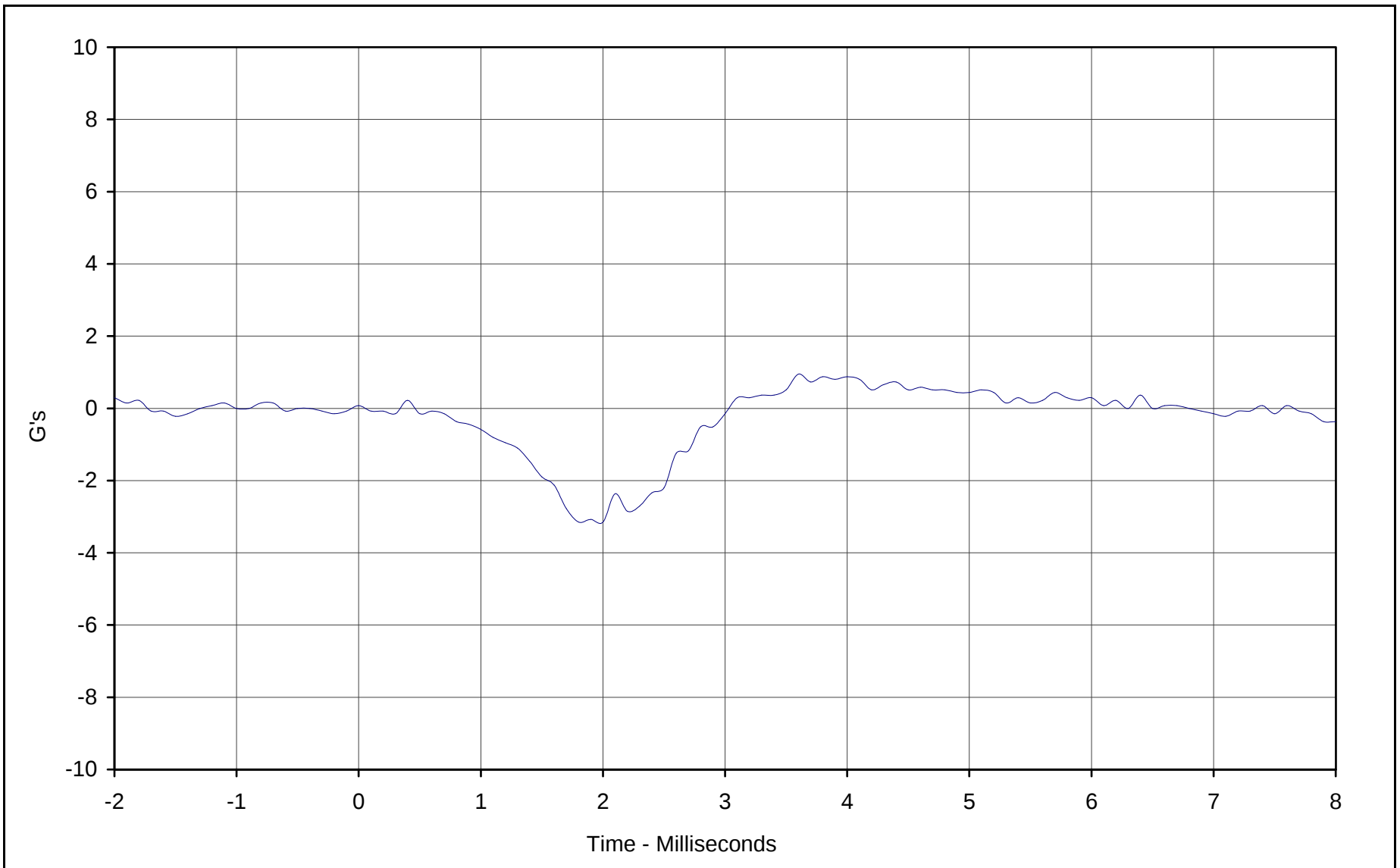
Curve Description: Head Resultant Acceleration
Maximum Value: 250.5 at 1.9 Milliseconds
Minimum Value: 0.4 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 11/19/01

Test Program: SID Head Drop Calibration
Test Information: SID S/N: 275 Test I.D.: HD11F



KAR21113-01

C-48



Curve Description: Head Y Axis Acceleration

Maximum Value:	1.0	at	3.6	Milliseconds
Minimum Value:	-3.1	at	1.8	Milliseconds
SAE Filter Class:	1000			
Date of Test:	11/19/01			

Test Program: SID Head Drop Calibration

Test Information: SID S/N: 275 Test I.D.: HD11F



KAR21113-01

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

Instrumentation Data Channel Assignments

Driver S.I.D. Serial Number 275

11/19/01

2002 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	Head CG	X	KEAC069	Accel.,1/2 bridge	Endevco	7264-2000X	G
2	Head CG	Y	KEAC080	Accel.,1/2 bridge	Endevco	7264-2000Y	G
3	Head CG	Z	KEAC082	Accel.,1/2 bridge	Endevco	7264-2000Z	G
4	Upper Rib Primary	Y	KEAC066	Accel.,1/2 bridge	Endevco	7264-2000X	G
5	Lower Rib, Primary	Y	KEAC067	Accel.,1/2 bridge	Endevco	7264-2000Y	G
6	Lower Spine, Primary	Y	KEAC068	Accel.,1/2 bridge	Endevco	7264-2000Z	G
7	Pelvis, Primary	Y	KEAC079	Accel.,1/2 bridge	Endevco	7264-2000X	G
8	Upper Rib Redundant	Y	KEAC073	Accel.,1/2 bridge	Endevco	7264-2000X	G
9	Lower Rib, Redundant	Y	KEAC074	Accel.,1/2 bridge	Endevco	7264-2000Y	G
10	Lower Spine, Redundant	Y	KEAC075	Accel.,1/2 bridge	Endevco	7264-2000Z	G
11	Pelvis, Redundant	Y	KEAC081	Accel.,1/2 bridge	Endevco	7264-2000X	G
12	Thorax Contact	Y	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%
13	Pelvis Contact	Y	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%

55/28 km/h Side Impact NCAP
Instrumentation Data Channel Assignments
Passenger S.I.D. Serial Number 274
11/19/01
2002 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
14	Head CG	X	KEAC086	Accel.,1/2 bridge	Endevco	7264-2000X	G
15	Head CG	Y	KEAC087	Accel.,1/2 bridge	Endevco	7264-2000Y	G
16	Head CG	Z	KEAC088	Accel.,1/2 bridge	Endevco	7264-2000Z	G
17	Upper Rib Primary	Y	KEAC070	Accel.,1/2 bridge	Endevco	7264-2000X	G
18	Lower Rib, Primary	Y	KEAC071	Accel.,1/2 bridge	Endevco	7264-2000Y	G
19	Lower Spine, Primary	Y	KEAC072	Accel.,1/2 bridge	Endevco	7264-2000Z	G
20	Pelvis, Primary	Y	KEAC090	Accel.,Full bridge	Endevco	7264-2000X	G
21	Upper Rib Redundant	Y	KEAC076	Accel.,1/2 bridge	Endevco	7264-2000X	G
22	Lower Rib, Redundant	Y	KEAC077	Accel.,1/2 bridge	Endevco	7264-2000Y	G
23	Lower Spine, Redundant	Y	KEAC078	Accel.,1/2 bridge	Endevco	7264-2000Z	G
24	Pelvis, Redundant	Y	KEAC089	Accel.,1/2 bridge	Endevco	7264-2000X	G
25	Thorax Contact	N/A	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%
26	Pelvis Contact	N/A	T0	Contact Switch	Tapeswitch	8 oz. Yellow	%

55/28 km/h Side Impact NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers

11/19/01

2002 Chevrolet Malibu 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
27	Right at Sill Front Seat	X	KETX2A	Accel., Triax	I.C. Sensor	3031-200	G
28	Right at Sill Front Seat	Y	KETX2B	Accel., Triax	I.C. Sensor	3031-200	G
29	Right at Sill Front Seat	Z	KETX2C	Accel., Triax	I.C. Sensor	3031-200	G
30	Right at Sill Rear Seat	X	KETX3A	Accel., Triax	I.C. Sensor	3031-500	G
31	Right at Sill Rear Seat	Y	KETX3B	Accel., Triax	I.C. Sensor	3031-500	G
32	Right at Sill Rear Seat	Z	KETX3C	Accel., Triax	I.C. Sensor	3031-500	G
33	Rear Floorpan Above Axle	X	KETX4A	Accel., Triax	I.C. Sensor	3031-500	G
34	Rear Floorpan Above Axle	Y	KETX4B	Accel., Triax	I.C. Sensor	3031-500	G
35	Rear Floorpan Above Axle	Z	KETX4C	Accel., Triax	I.C. Sensor	3031-500	G
36	Left Sill at Rear Door	Y	KEVA012	Accel., Vehicle block	I.C. Sensor	3031-500	G
37	Left Sill at Front Door	Y	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
38	Left Front Door Centerline	Y	ICST004X	Accel., Triax	I.C. Sensor	3031-500	G
39	Rear Occupant Compartment	Y	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
40	Left Front Door Mid-Rear	Y	ICST004Y	Accel., Triax	I.C. Sensor	3031-500	G
41	Left Front Door Upper Centerline	Y	ICST004Z	Accel., Triax	I.C. Sensor	3031-500	G
42	Rear Door Mid-Rear	Y	ICST005X	Accel., Triax	I.C. Sensor	3031-500	G
43	Rear Door Upper Centerline	Y	ICST005Y	Accel., Triax	I.C. Sensor	3031-500	G
44	B-Post Lower	Y	KEBX2A	Accel., Biax	I.C. Sensor	3031-500	G
45	B-Post Middle	Y	KEBX2B	Accel., Biax	I.C. Sensor	3031-500	G
46	A-Post Lower	Y	KEBX1A	Accel., Biax	I.C. Sensor	3031-200	G
47	A-Post Middle	Y	KEBX1B	Accel., Biax	I.C. Sensor	3031-500	G
48	Front Seat Track	Y	KEIC008Y	Single	I.C. Sensor	3031-500	G
49	Rear Seat Structure	Y	N/A	N/A	N/A	N/A	N/A
50	Vehicle CG	X	KETX2A	Accel., Triax	I.C. Sensor	3031-200	G
51	Vehicle CG	Y	KETX2B	Accel., Triax	I.C. Sensor	3031-200	G
52	Vehicle CG	Z	KETX2C	Accel., Triax	I.C. Sensor	3031-200	G

**55/28 km/h Side Impact NCAP
Instrumentation Data Channel Assignments
Moving Deformable Barrier
11/19/01
2002 Chevrolet Malibu 4 Door Sedan**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
53	MDB CG	X	ICST001X	Accel., Triax	I.C. Sensor	3031-100	G
54	MDB CG	Y	ICST001Y	Accel., Triax	I.C. Sensor	3031-100	G
55	MDB CG	Z	ICST001Z	Accel., Triax	I.C. Sensor	3031-100	G
56	MDB Rear Centerline	X	ICST002X	Accel., Biax	I.C. Sensor	3031-100	G
57	MDB Rear Centerline	Y	ICST002Y	Accel., Biax	I.C. Sensor	3031-100	G
58	Right Bumper Contact	N/A	T0	Contact Switch	Tapeswitch	40 oz. Grey	%